a W. R. C. Smith publication

FIFTY CENTS

Textile Industries

Formerly "COTTON"

JULY 1960

NEW AT ATLANTIC CITY
Highlights of the American Textile Machinery Exhibition
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How to knit Agilon hose
pag

130 West Point Pacesetters sold since introduction prove

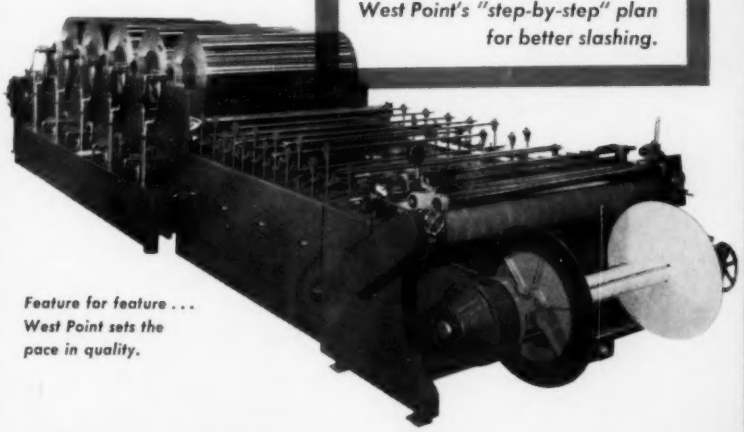
West Point Leads...

✓ **in quality.** West Point's Pacesetter multi-cylinder slasher features the largest cylinder journals, the largest bearings, the largest sprockets, the heaviest frame, the greatest access to warp, a high-capacity versatile size box, and a rugged head end with the best and simplest beam drive.

✓ **in sales.** Since its introduction in late 1958 more than 130 West Point Pacesetter slashers have been ordered by leading mills. An overwhelming preference for the long-range value of the West Point Pacesetter.

✓ **in installations.** West Point leads the field with more than 200 modern slasher installations in the last four years. We hope you will be able to visit several of these and see for yourself why West Point's Pacesetter is the outstanding slasher in the textile industry today.

Expanding or modernizing?
Stay within your budget with West Point's "step-by-step" plan for better slashing.



Feature for feature... West Point sets the pace in quality.

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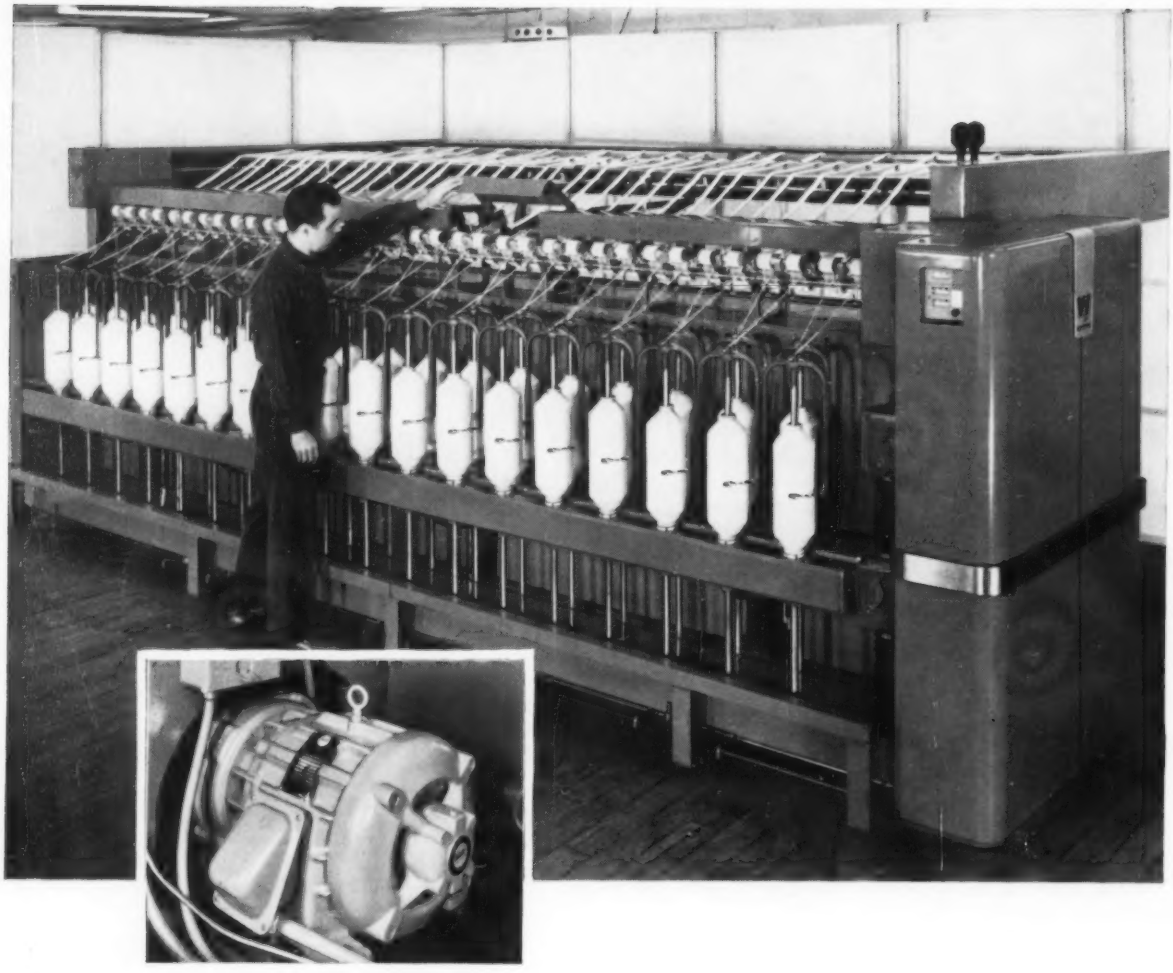
WEST POINT, GEORGIA

University Microfilms
313 No First St
Ann Arbor Mich 4

Next month—Special man-made fibers feature



DIEHL* Electronically Controlled Power Transmitter Drives Whitin's New Model "P" Roving Frame

The new Whitin Model "P" Roving Frame, featuring high speeds, larger packages, and automatic positioning, is driven by a DIEHL electronically controlled power transmitter.

The DIEHL drive consists of a textile mill type enclosed lint free motor, an integral mounted air operated disc clutch and an electronic system which automatically controls the speed during start-up acceleration of the frame; thus improving quality of roving and increasing production. The rate of acceleration is adjustable and the drive positions the flyers automatically when the frame stops for doffing.

Ask DIEHL to assist you in engineering your drive problems.

*A Trademark of DIEHL MANUFACTURING COMPANY

Diehl*

DIEHL MANUFACTURING COMPANY

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Finderne Plant, SOMERVILLE, NEW JERSEY

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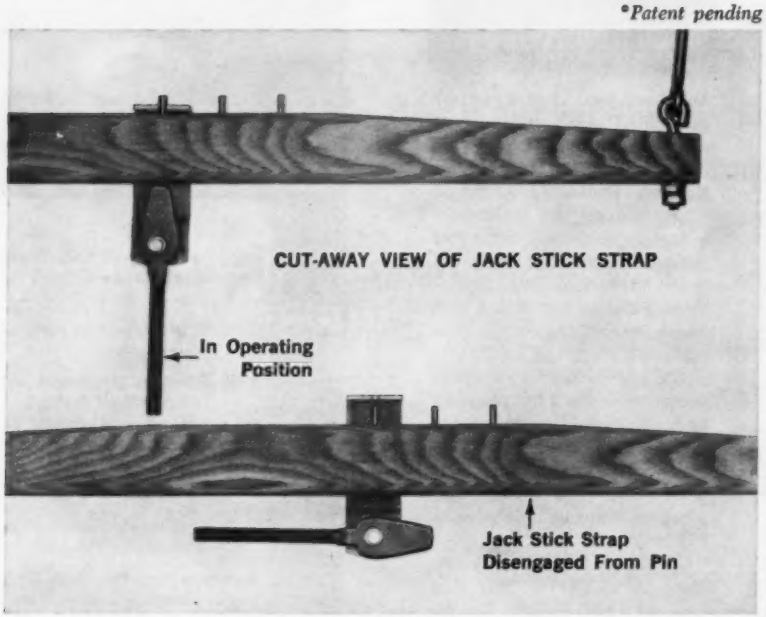
2730

DRAPER BRIEFS
NEWS OF INTEREST IN WEAVING

"SELECTIVE" TYPE JACK STICKS* SAVE TIME... SAVE MONEY

*Patent pending



A new Jack Stick (Selective) construction, with Positive Pull-down parts, is available for most Draper loom models – up to six harnesses with cams on auxiliary shaft, or four harnesses with cams on cam shaft.

These Jack Sticks have pins driven into the top edge, and a hole in the Jack Stick Strap fits over any one of these pins. The Jack Stick Strap is movable and can be located on the pin which matches one of the sequence of treadle positions. The Jack Stick can be reversed, end for end, to meet maximum cam conditions. The Turnbuckle End (Top) has an elongated cam which prevents the Jack Stick Strap from jumping off the pin during operation and, when the turnbuckle assembly is moved parallel with the Jack Stick, permits moving the Jack Stick Strap to any one of the required positions.

Since one Jack Stick pattern number suffices for the varying number of harnesses used on a loom, the total number of Jack Sticks which a mill must stock is reduced.

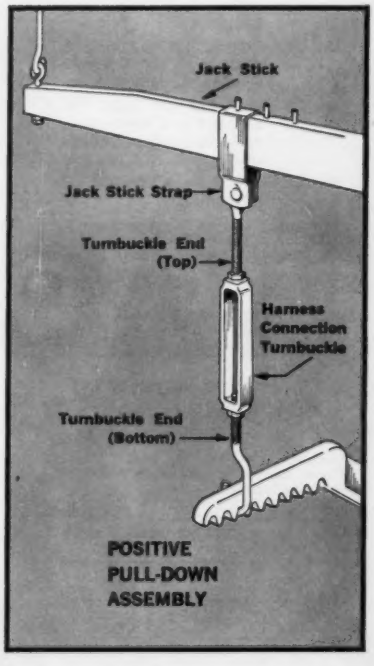
The Jack Stick Strap can be removed from the Jack Stick, permitting a mill to use only one Jack Stick pattern number for any depth of harness frame. This contributes to a further reduction in the quantity of Jack Sticks a mill must keep on hand.

Wear on Jack Sticks is reduced by the lengthened Jack Stick Strap which locates the Turnbuckle farther from the Jack Stick and, in most cases, prevents the Turnbuckle from coming up between adjacent Jack Sticks.

In addition, the eye for the Jack Hook gives increased clearance to further reduce Jack Stick wear.

New Jack Sticks (Selective) offer these advantages:

1. Reduce quantity of Jack Sticks mill must order.
2. Simplify stock room and ordering records.
3. Versatility – only one pattern number required for all treadle positions and/or depth of harness frames.
4. Jack Sticks stronger at center section.
5. Reduce wear on Jack Sticks from Turnbuckle and Jack Hook.
6. Easy assembly, disassembly or relocating of Jack Strap. Jack Sticks of different lengths are interchangeable with the Jack Strap assembly.



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Years of experience in textile processing have produced a library of technical information which is available in individual bulletins, free on request. Use the coupon below to let us know which you'd like to receive.

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Please send me a copy of each of the following bulletins:

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Made for Nylon...

And Arnel, too, for that matter. As well as rayon-acetate, and other synthetics.

What's made for them? Becco's Peracetic Acid, of course. It's perfect for bleaching many synthetics, since you get good clear whites with practically no reversion during heat-setting operations. You'll find Becco Peracetic Acid minimizes reversion in storage, too.

We say "many" synthetics, because we can't list them all here. If you're having trouble bleaching any particular one, why not write us? We'll tell you what we've done to date, and what we might be able to work out for you.

If you're finishing nylon, start off by getting your free copy of Becco Bulletin No. 60 —"Successful Bleaching of Types 670 and 200 Nylon with Peracetic Acid."

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Problems in handling Hydrogen Peroxide

Becco's Four-Fold Engineering Service Program—offered free—includes:

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Textile Industries

Formerly "COTTON"

JULY 1960 VOL. 124, NO. 7

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NEXT MONTH

■ TEXTILE INDUSTRIES for August will spotlight man-made fibers in a special feature. Among the articles to be included in this feature will be one on polypropylene, a new fiber with great promise; one on the economics of textured yarns; and several others. Also included will be the 1960 revision of TI's chart, "Properties and Uses of the Man-Made Fibers," and an up-to-date list of the trademarks used by American producers of staple fiber, tow, filament yarn, and textured yarn, with a list of producers' sales offices.

For cotton mill men, the second installment of the full text of papers presented at the eleventh Cotton Research Clinic will appear.

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EDITORIAL AND EXECUTIVE OFFICES: 806 Peachtree St., N. E., Atlanta 8, Georgia—Phone: TRinity 4-4462

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TEXTILE INDUSTRIES is published monthly, with an extra issue in September, by W. R. C. Smith Publishing Company. William J. Rooke, chairman of the board; Richard P. Smith, president and treasurer.

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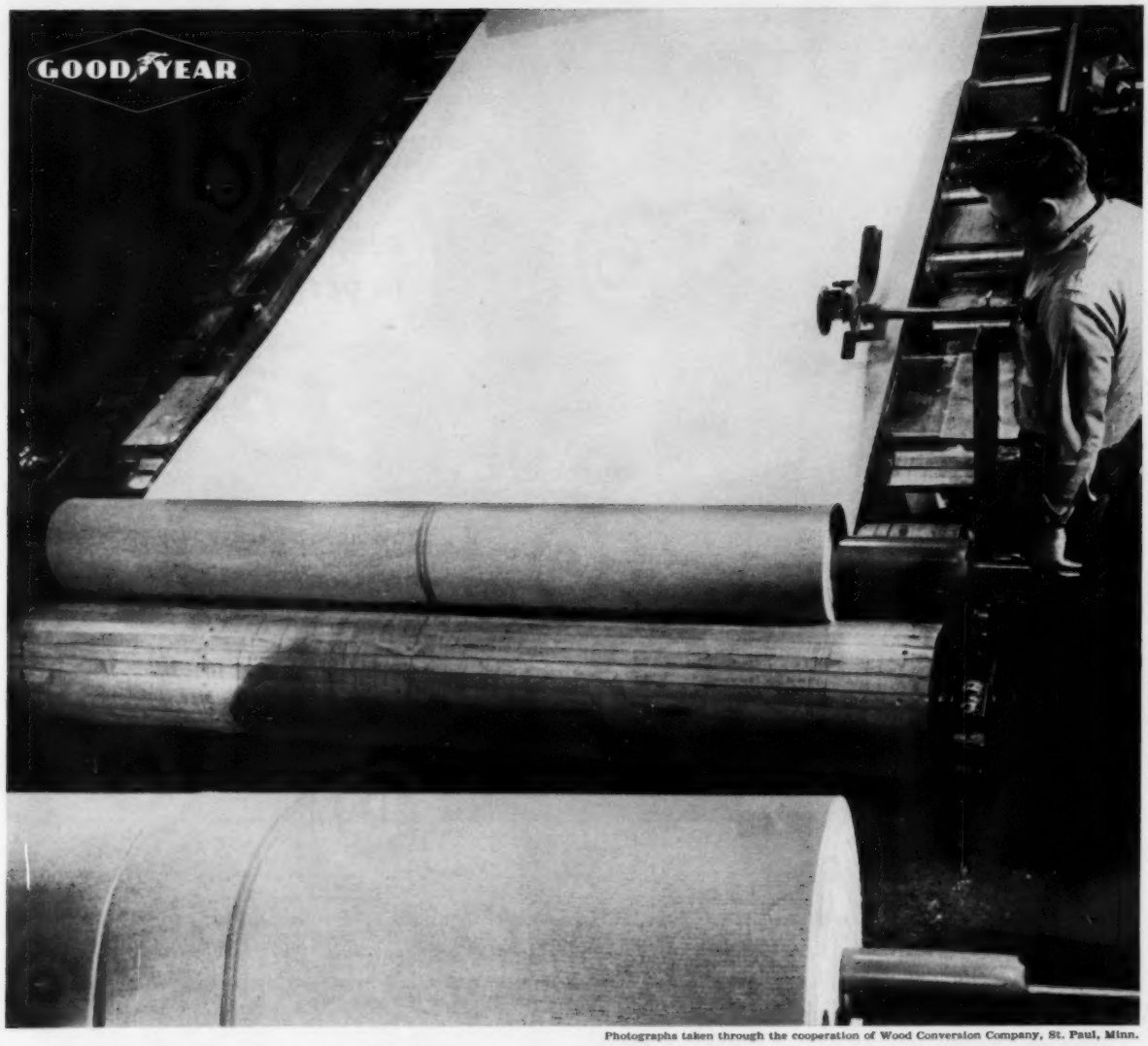
Indexed in "Applied Science & Technology Index."
Executive, Editorial, Subscription, and Advertising Offices are located at 806 Peachtree St., N. E., Atlanta 8, Georgia.

Subscription Rates: United States and Possessions, $2.00 for one year; Canada, South America, Central America, $5.00 a year; Foreign Countries, $10.00 a year.
PUBLICATION OFFICE: 116 E. Crawford St., Dalton, Ga. Second-class postage paid at Dalton, Ga., and at additional mailing offices.
Postmaster: Please send notices by Form 3579 to 806 Peachtree St., N. E., Atlanta 8, Ga.



Photographs taken through the cooperation of Wood Conversion Company, St. Paul, Minn.

Post another "net" gain for CHEMIGUM LATEX!

A more durable spring insulator, or pad backing, was what this cellulose cushioning manufacturer was looking for.

He achieved it, easily and economically, by rubberizing the high-quality cotton net back of the high-quality cushioning with CHEMIGUM LATEX. This not only improved its strength and wear-resistance substantially, but provided a nonskid surface which also is important to cushioning durability. CHEMIGUM LATEX was chosen for its superiority in these properties plus its ease of processing, particularly in the calendering operation.

What can your product gain from CHEMIGUM LATEX? Find out by writing for details, including the latest *Tech Book Bulletins,* to Goodyear, Chemical Division, Dept. S-9439, Akron 16, Ohio.

Lots of good things come from

GOODYEAR

CHEMICAL DIVISION

Chemigum—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

For further information use Handy Return Card, Page 177

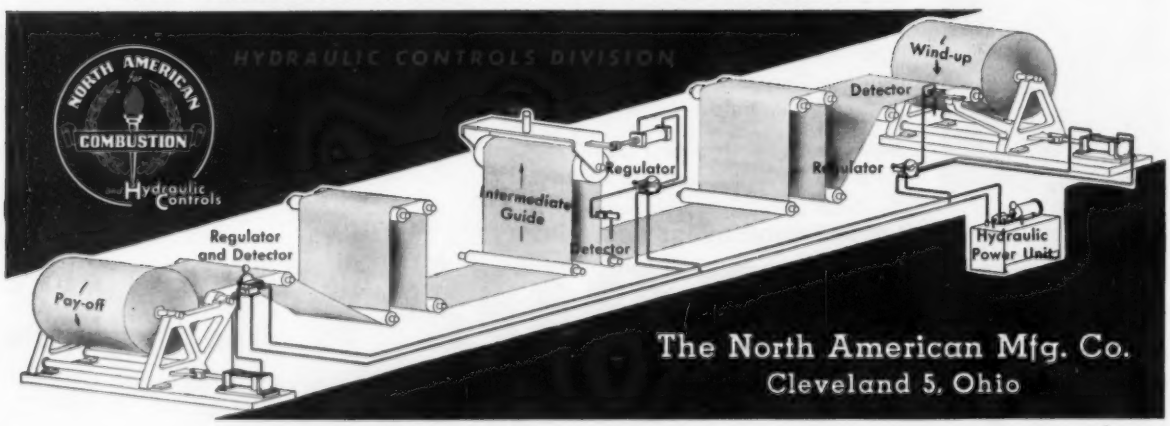
By eye or air, keep production lines rolling

Now you can speed production, wind up perfect rolls, reduce spoilage and offer more uniform goods by using North American Cloth Guide Control. Use your choice of electric eye or a breath of air. . . either detector keeps cloth in alignment without touching it!

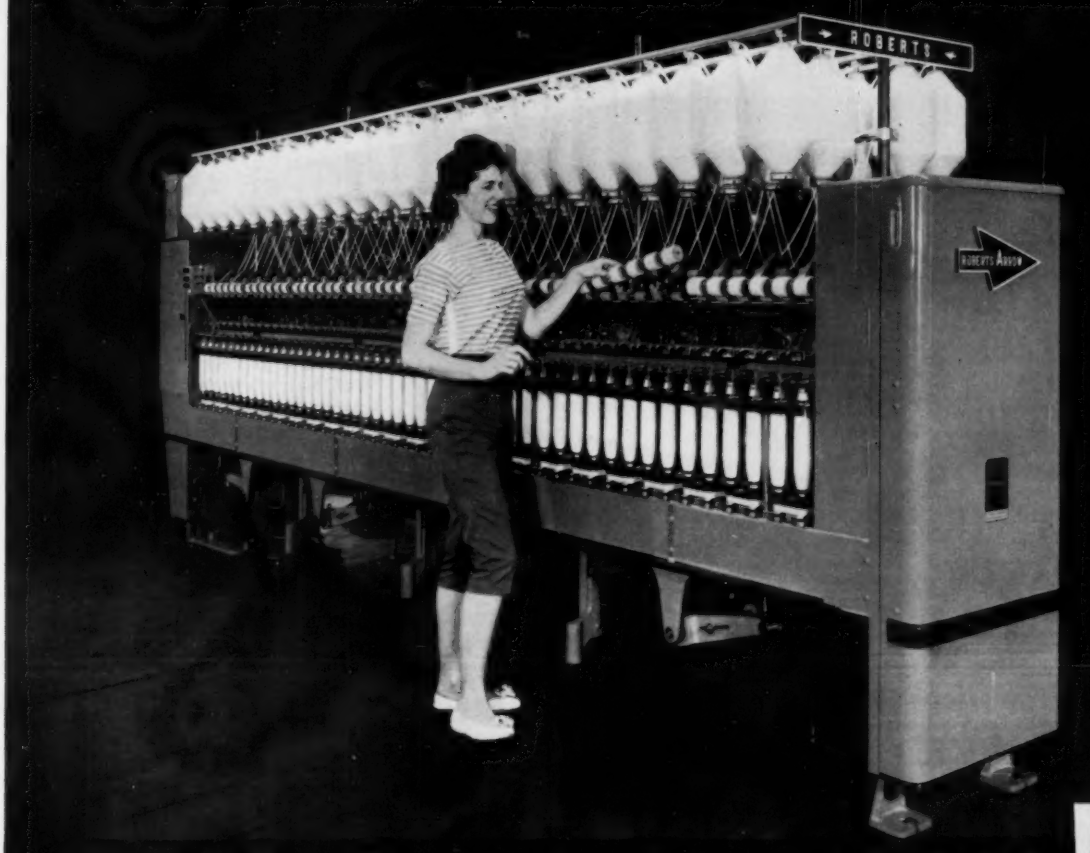
Designed for tenter frames, inspecting machines, coating and marking machines, laminators, tubers, beamers, slitters, rewinders, etc. Twin regulators keep pins or clips in alignment with both selvage edges; and keep production rolling smoother at higher speeds.

Learn how easily the Cloth Guide Control can be installed on your machinery to maintain perfect alignment automatically. New bulletin is now ready. Write for your copy today.

IDEAL FOR UNWINDING, REWINDING, OR INTERMEDIATE STEERING



ROBERTS ARROW SPINNING



Spindle Speeds Over 13,000!

One of the most frequent questions asked today concerns high spindle speeds. The answer comes from many of the 850 Roberts Arrow Spinning Frames running in leading mills since 1956. Three examples are shown at the right.

The new and refined Arrow compares advantageously with all other all-ball-bearing frames and greatly outperforms all conventional and standard-type spinning frames. The Arrow offers the greatest dollar-for-dollar-value against any other make of frame in dependable performance, lowest initial cost, and maintenance-free operation.

Arrow Spinning is available for either the cotton or the worsted system for natural or man-made fibers or blends.

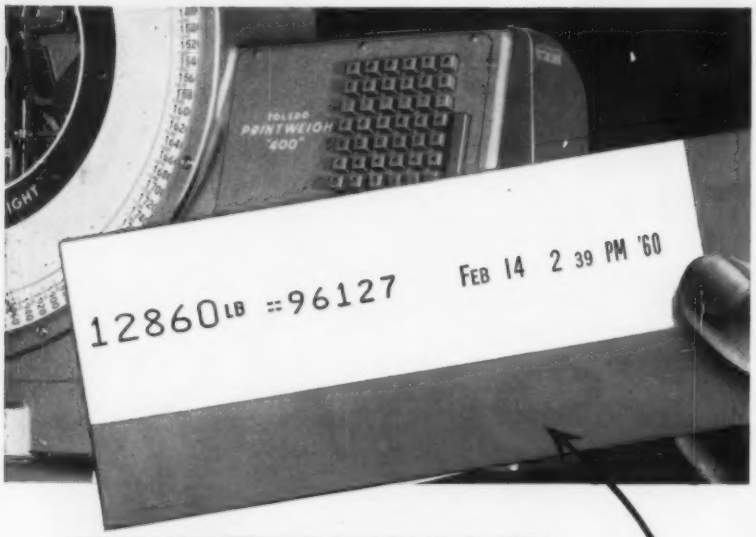
3 MILLS RUNNING ARROW FRAMES AT 12,300 to 13,200 R.P.M.

- A major sheet manufacturer runs 36's warp yarn with 2" ring at 12,300 r.p.m. spindle speed on 44 Arrow frames.
- A major manufacturer of Dacron-cotton fabrics runs 50's on 66 Arrow frames with a 1-7/8" ring at 13,200 r.p.m. spindle speed.
- A major broadcloth manufacturer using 96 Arrow frames makes 40's with a 1-13/16" ring at 12,800 r.p.m. spindle speed.

ROBERTS COMPANY

SANFORD, NORTH CAROLINA

TOLEDO SCALES that PRINT Complete Weight Records for You . . .



. . . THE ANSWER to prevent "guesswork" and errors in cost control!

Toledo Printweigh Scales are available in a wide range of models, including Portable, Floor, and Bench types as illustrated; also Built-in, Hopper, Overhead Track and Motor Truck types.

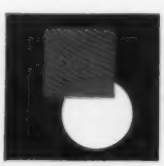
Human errors in reading, remembering and recording weights are eliminated with Toledo Printweigh "400" Scales. They're the surest way to satisfy your requirements for weight records that are complete and indisputable.

Weights are printed in full figures, even when unit weights are used. Choice of printing on 8½" x 11" forms, or on tickets; also on strips. Weight data may be transmitted electrically for recording on remote adding or other office machines. "Memory" feature available for printing weight data, even after load is removed.

Toledo Printweigh "400" Scales give new flexibility and efficiency in weighing . . . to cut costs, guard quality, prevent profit-stealing weighing errors. Ask your Toledo representative for the full story on Printweigh Scales, or WRITE TODAY FOR BULLETIN 2017. TOLEDO SCALE, Division of Toledo Scale Corporation, Toledo 12, Ohio
(Toledo Scale Co. of Canada, Ltd., Windsor, Ont.)

"MISFIT" SCALES MULTIPLY COSTS

Scales can become "misfits" as a result of changes in plant layout, materials handling, inventory controls, value or quantity of materials weighed. If this has happened in your plant, the results can be costly. For example: weighing errors, production bottlenecks, materials handling inefficiencies. Be sure your scales are adequate for the job. Ask your Toledo representative about a scale adequacy check in your plant, or send for the Toledo Weight Fact Kit.



SERVICE

TOLEDO® *Headquarters for Weighing Systems*

SHORTS & REMNANTS

► Some more signs seen in shop windows: In Dublin, "Wedding gowns for all occasions;" in an Atlanta restaurant, "Boneless oysters."

Aussie in a Hurry

TI received this RCA Radiogram the other day:

"ADVISE WHETHER ANY ARTICLE PUBLISHED LAST FEW YEARS ON WEAVING AND FINISHING FIBRE GLASS FABRICS REPLY PAID"

NOEL HUNT
Melbourne, Australia

► Yes, we've published a few; unfortunately, no reprints or tear sheets are available.

Medium Well Done

No, this is not a medium practicing a new levitation act; it's a model showing off a new medium. Or is that confusing? Well, here's what the caption says, "Lightness of a new filtering media, announced by Owens-Corning Fiberglas Corp., is

demonstrated by model Mary Bundy. Said to be the finest filtering media produced for commercial purposes, the material is designed for use where a higher than normal degree of air cleaning is required." That's Fiberglas Air Filter Type 004-12. But whether you prefer a "medium" or a "media," we're sure that this media filters good, like a medium

Eastman now offers textile finishers 3 basic types of polyethylene

New EPOLENE resins enable textile chemists to formulate broader range of softeners

The wide range of properties now available in Eastman's Epolene series provides greater flexibility in formulating polyethylene emulsions for softening "wash and wear" cottons and synthetics, and for textile lubricants and sizes.

Permanent, low in color, non-chlorine retentive and easy to prepare, emulsions based on Epolene polyethylene give you a practical and economical method for improving the hand, abrasion resistance and tear resistance of "wash and wear" treated fabrics.

With Epolene, you can prepare any kind of emulsion system, cationic, anionic or non-ionic, with solids contents of up to 40%.

Choose from three different low-molecular-weight resins to obtain the right emulsion properties and finishing characteristics for your equipment and service.

Epolene E is the highest-molecular-weight resin of the three. It produces stable, low-color emulsion systems of superior quality for use in softening cottons or synthetics, or as a lubricant to reduce needle-cutting and increase sewability. Like other Epolene resins, it needs no curing, lasts through repeated launderings and resists dirt pick-up and redeposition.

Epolene LVE, a new resin type, has a lower melt viscosity than has Epolene E, thus offering somewhat better handling characteristics. Epolene LVE is softer than other resins in the series. The stability of its emulsions in the presence of resin catalysts is outstanding, especially at the low end of the pH scale, as indicated by its relatively high HLB factor.

Epolene HDE is the first high-density, emulsifiable low-molecular-weight polyethylene on the market. Because it is much harder, it improves significantly the abrasion resistance and tear resistance in cotton and cotton blends. Its stability and permanence are excellent. It, too, offers easier handling characteristics during emulsion preparation because of its low melt viscosity.

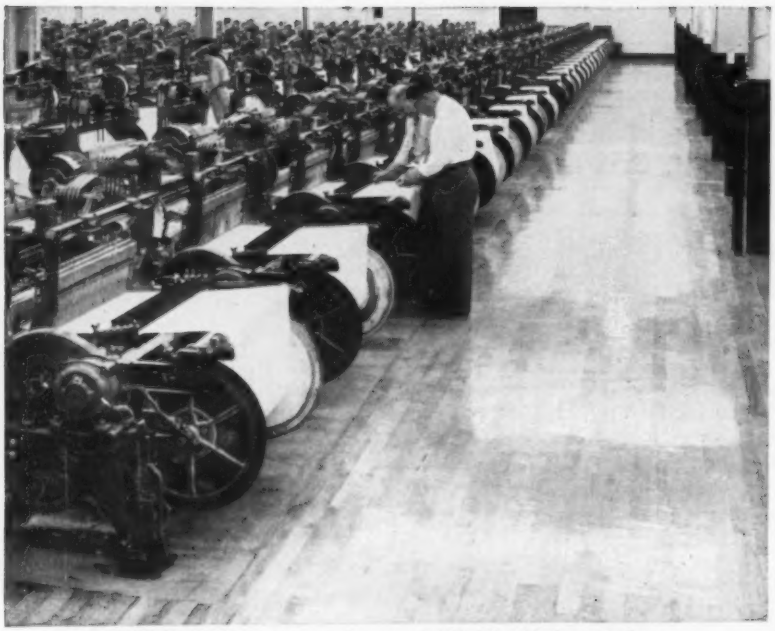
If you are formulating polyethylene softeners and would like to produce stable, economical emulsion systems of superior all-'round characteristics, look to Epolene from Eastman. Let us introduce you, also, to new time-saving and cost-cutting emulsifying techniques developed at our textile laboratories. For more information on the formulating and performance advantages of these superior polyethylene resins or for specific formulating assistance, write your nearest Eastman office. We invite your inquiry.

Property	Epolene E	Epolene LVE	Epolene HDE
Molecular Weight	2500	1500	1500
Density	0.938	0.939	0.956
Ring and Ball Softening Point, °C. (ASTM D-36-26)	104-108	104-105	110-111
Penetration Hardness (100 g./5 sec./77°F., tenths of mm.)	2	5	1
Color (liquid), Gardner scale, max.	2	2	2
Brookfield Viscosity (cps. @ 120°C.)	1500	400	455

Epolene

EASTMAN low-molecular-weight polyethylene resins

SALES OFFICES: Eastman Chemical Products, Inc., Kingsport, Tennessee; Atlanta; Chicago; Cincinnati; Cleveland; Detroit; Framingham, Massachusetts; Greensboro, North Carolina; Houston; New York; Philadelphia; St. Louis. **West Coast: Wilson and Geo. Meyer & Company,** San Francisco; Los Angeles; Portland; Salt Lake City; Seattle.



TENNANT-SEALED weave room floors are bright, dirt-resistant, easy to clean.

How your TENNANT Floor Specialist helps you save ⅓ in floor care costs

Would you like your mill to have floors as bright and clean and durable as this? And at an annual cost up to a third less than you're now paying?

Your TENNANT Floor Specialist *can show you how.*

Makes floors dirt resistant. He can demonstrate, for example, the exclusive TENNANT SYSTEM process that actually makes your floors up to 3 times more resistant to dirt. And when they *do* soil, dirt wipes off easily in a fraction of the usual time.

Seal lasts twice as long. Your TENNANT Man will also demonstrate heavy duty floor seals which are *unequalled for durability.* Since they end the need for frequent refinishing, you'll save many gallons of material each year.

Used in 1000 major mills. More than 1000 of America's leading mills are now saving money by using the complete TENNANT SYSTEM of floor care. And most are following an *individualized* program which their TENNANT Man developed to fit their specific needs in each department.

WRITE TODAY *for an analysis of your floor care problem. You may be surprised at the saving you can make.* G. H. Tennant Co., 735H No. Lilac Drive, Minneapolis 22, Minnesota.

OUR 90th YEAR TENNANT

The Textile Industry's Most Widely Used

FLOOR MAINTENANCE SYSTEM

Methods

Machines

Materials

FLOOR MAINTENANCE SYSTEMS

SHORTS & REMNANTS

(from page 8)

should, because it's what's up front that counts.

TI Quoted on Cotton

"We would like to use the attached mail ad with the quote from your magazine. May we have your permission?"

A. G. POOR
Standard Bleachery & Printing Co.
Carlton Hill, N. J.

► Mr. Poor was referring to the article, "Cotton's Sorry Plight," which appeared in the "Executive Views" department of our April issue. The specific paragraph which he wanted to use in his mailing piece dealt with the deterioration of today's machine-harvested cotton, as compared to the hand-picked crops of former years. Mr. Poor added the following comment, "Pity the poor finisher who is expected to get cotton goods white—or dye them properly." We were glad to extend permission to use the quote.

► Here is some startling information passed on to its readers without comment by *Smyre News Bulletin,* published by A. M. Smyre Manufacturing Co., Gastonia, N. C.: "Recreation is Fun!" So, don't hesitate—recreate!

► Someone brought to our attention this quote from the *Charleston* (W. Va.) *Gazette*: "Everything we write is true, of course. But some things are even truer than others." Asked if this was S & R's philosophy. Well, maybe.

Sticky Lint

"We have a problem of cotton lint adhering to the walls and ceiling in our spinning department. Will you kindly advise is a strong vacuum cleaner made to solve this problem?"

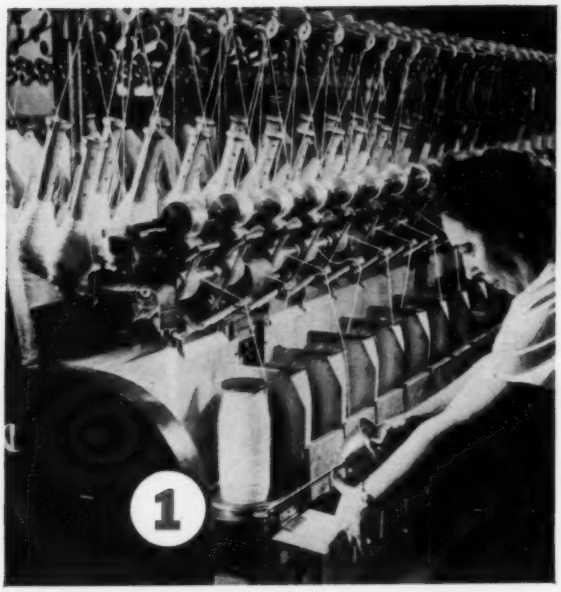
MORRIS GORDON
Morris Gordon, Inc.
Paterson, N. J.

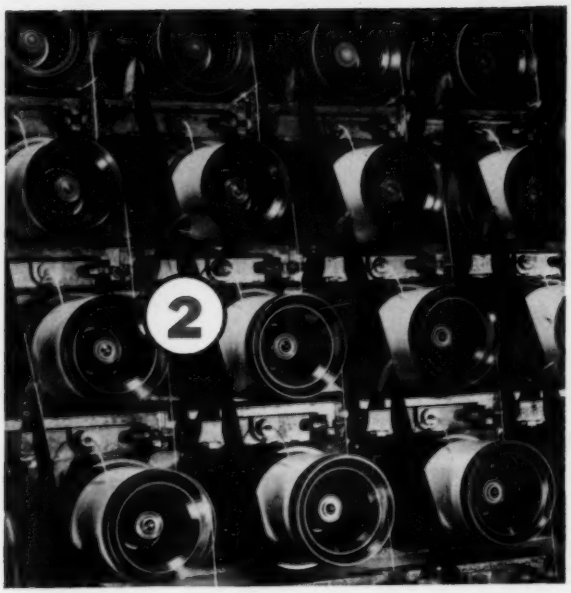
► We gave him a couple of names; would anyone else care to bid for the business?

Wool Scouring, the Hard Way

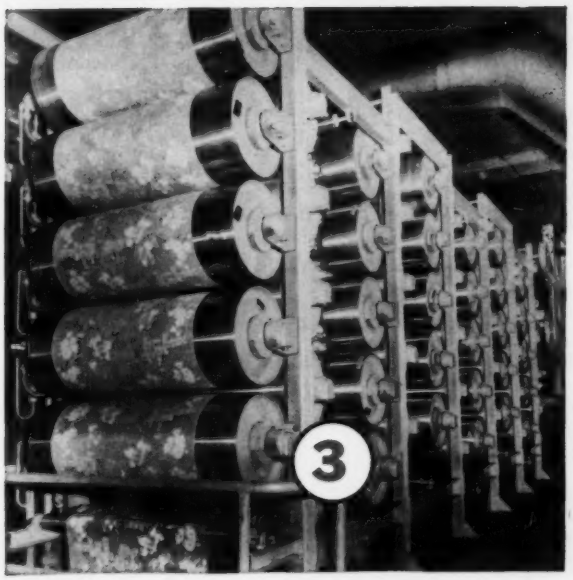
"WOOL—TO CLEANSE. — Make a liquid of water 3 parts and urine 1 part; heat it as hot as you can bear the hand in it; then put in the wool, a little at a time, so as not to have it crowd; let it remain in for 15 minutes; take it out over a basket to drain; then rinse in running water,

Continued on page 14





SPIN, TWIST, FINISH... ESSO LUBES LIGHTEN THE WEAR



1. TELURA® spindle and twister-ring oils resist oxidation and discoloring. Highly refined to lubricate for long periods without forming sludge or varnish. Optimum viscosity and "metal-wetting" ability for good lubrication and vibration damping.

2. BAYOL® white oils lubricate rayon and synthetic fibers. Make a better fiber finish. Protect them from abrasion and breakage, give positive control over fiber friction. Thoroughly refined to resist discoloration and oxidation.

3. NEBULA® EP multi-purpose grease lubricates steam-heated can bearings and other "hot spots". Stays on the job under high temperature and extreme pressure conditions. Lubricates bearings of all kinds for extended periods.

Esso lubricants can help you lighten wear from one end of the mill to the other. Get more information on them from your local Esso office, or write: Esso Standard, Division of Humble Oil & Refining Company, 15 W. 51st St., New York 19, N. Y.

ESSO

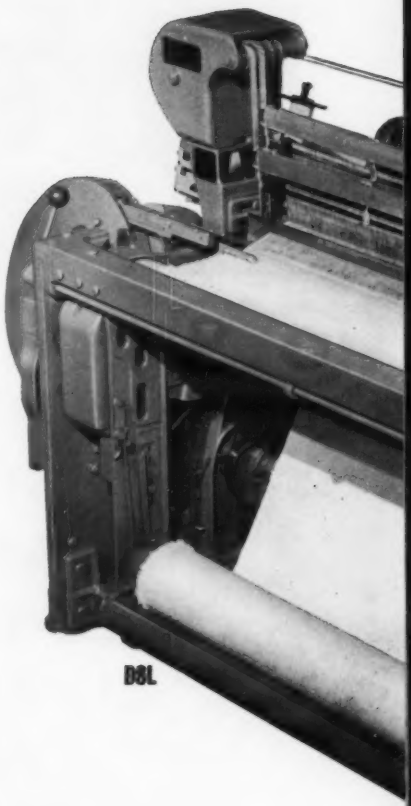
In Industry after Industry..."ESSO RESEARCH works wonders with oil"

INTRODUCED

IN ATLANTIC CITY

THE THREE NEW ARRIVALS

in the family of DRAPER Looms



DSL

DSL

(DRAPER SHUTTLELESS LOOM)

a revolutionary break with convention

a new horizon in weaving

X-3

high speed versatility

new construction

improved performance

XB

rugged stability

mechanical excellence

planned economy

THREE BRAND NEW LOOMS

for complete details

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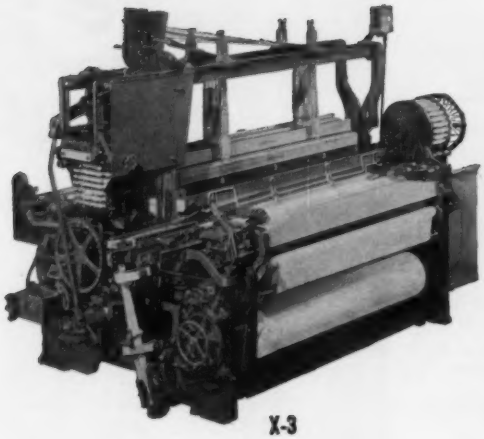
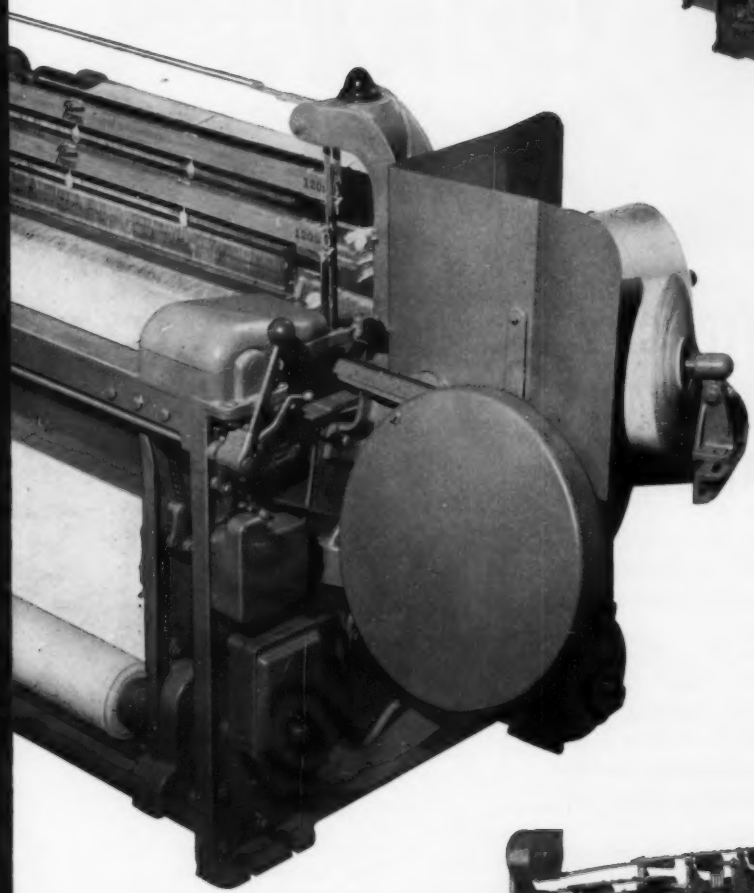
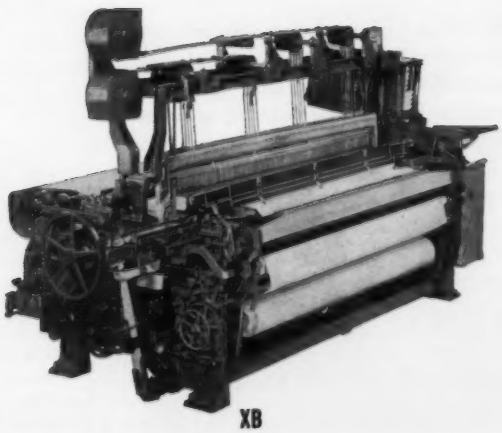
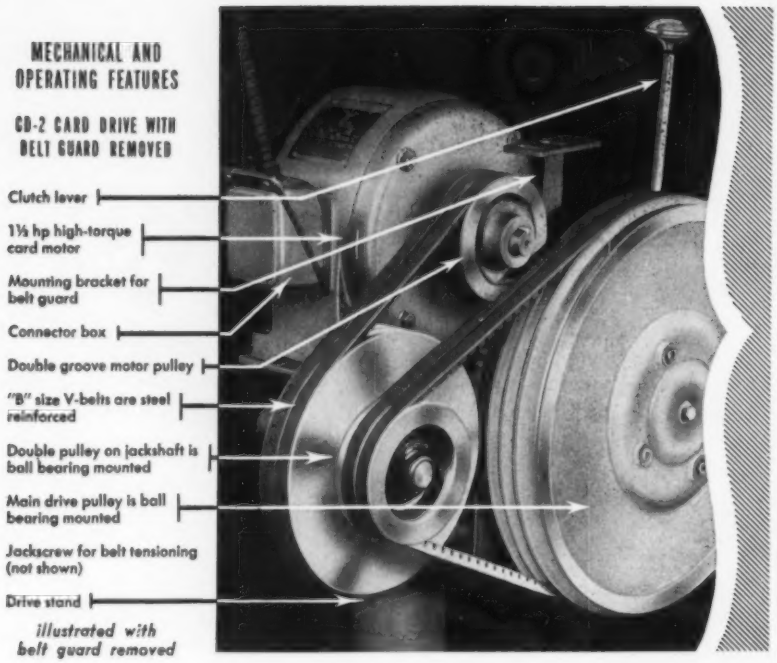


X-3





XB


MECHANICAL AND OPERATING FEATURES
CD-2 CARD DRIVE WITH BELT GUARD REMOVED
Clutch lever
1½ hp high-torque card motor
Mounting bracket for belt guard
Connector box
Double groove motor pulley
"B" size V-belts are steel reinforced
Double pulley on jackshaft is ball bearing mounted
Main drive pulley is ball bearing mounted
Jackscrew for belt tensioning (not shown)
Drive stand
illustrated with belt guard removed

ONLY SOUTHERN STATES TYPE CD-2 INDIVIDUAL DRIVE FOR COTTON CARDS OFFERS ALL THESE FEATURES

The CD-2 Individual Card Drive is the simplest, safest, and most efficient drive on the market today. It combines into one unit the features most wanted by mill men when specifying a drive for cotton cards. Here is why:

Finger-Tip Control: No changes in operating procedure. The unit is controlled by a simple clutch lever in both starting and hand stripping.

Full Speed in Seconds: A 1½ hp high torque card motor smoothly brings the card into full operation, seconds after the clutch is engaged.

Safety Engineered: All belts and moving parts are covered. Starting and idling is accomplished by the clutch lever. Stripping is done in the conventional manner.

Rugged Construction: The entire unit is built for heavy-duty service: steel main stand; cast iron jackshaft bracket and main pulley; cast aluminum cover; ball bearing construction throughout.

Easy Installation: Fits any cotton card. Minimum number of holes to drill in frame. Drive pulley, collar and clutch are preassembled and slip on shaft using existing keyway.

See your Southern States representative for all the facts, or you may write direct for Bulletin 301-a.

SOUTHERN STATES
EQUIPMENT CORP.
HAMPTON, GEORGIA

SHORTS & REMNANTS

(from page 10)

and spread it out to dry; thus proceed in the same liquor; when it gets reduced fill it up, in the same proportions, keeping it at hand heat, all the time not using any soap."

That's from a book, "Dr. Chase's Recipes; or, Information for Everybody," published at Ann Arbor, Mich., in 1863. Among the recipes are some for coloring woolen goods with cochineal, madder, oak bark, fustic, etc. And you can now buy wool skeins dyed from these recipes, from A.N.I. Art Needlework Industries Ltd., Oxford, England.

► We notice that some folks are still having trouble pronouncing "Dacron." Some say "Day-kron," some say "Dak-ron." The Du Pont Co. says it's "Day-kron," and they oughta know.

TI Goes to Tex

Starting with the August issue, TEXTILE INDUSTRIES will begin to follow the recommendations of American Society for Testing Materials and the International Organization for Standardization in designating yarn counts. Wherever a yarn count —cotton, woolen, worsted, synthetic, or what have you—is mentioned in our pages, the usual designation will be followed in parentheses by the tex number. For example, a 30s cotton yarn will be referred to like this: 30s/1 (20 tex).

For a discussion of the tex system and the reasons for its adoption see "Tex—A Universal Yarn Numbering System," in TEXTILE INDUSTRIES for April, 1958, p. 149. News of the plan for its orderly introduction to the industry in this country appears in TI for June, 1960, p. 77.

As a service to the industry, TI has prepared a chart giving tables for converting cotton, woolen run, worsted, and denier counts to tex numbers. For your free copy, write:

The Editors
TEXTILE INDUSTRIES
806 Peachtree St., N.E.
Atlanta 8, Georgia

Brain Teasers

We have just finished reading (if that's the word) a new book, "Ingenious Mathematical Problems and Methods," written, or rather edited, by **L. A. Graham,** engineering executive and founder of Graham Transmissions, Inc., Menomonee Falls, Wis. This collection of 100 problems

Continued on page 188

PART OF THE PACKAGE

Technical help like this with your SOLVAY textile chemicals!

The bleaching process these technicians are discussing is a dramatic example of how Solvay researches its chemicals *specifically* to help textile men. As Solvay textile specialists, they are part of a continuing study of hydrogen peroxide's basic role in bleaching. From this work, Solvay developed a revolutionary new and original method* that actually reduces cotton bleaching chemical costs *up to 50%*—yet improves whiteness and other important qualities of the cloth.

*Solvay® Activated Hydrogen Peroxide Bleaching Process (U. S. Patent 2903327) —available on a non-exclusive contract and on a royalty-free basis.

Consider these advantages of placing your chemical business with Solvay:

- Textile-trained representatives available to call on you to **discuss** your problems.
- Textile-trained technical men with the most modern laboratory equipment, available to **work** on your problems.
- Textile-experienced—for almost 80 years.

SOLVAY CHEMICALS FOR TEXTILES
Caustic Soda • Chlorine • Hydrogen Peroxide
Sodium Nitrite • Mutual® Chromium Chemicals
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SOLVAY PROCESS DIVISION
61 Broadway, New York 6, N. Y.

SOLVAY branch offices and dealers are located in major centers from coast to coast. Send export inquiries to Allied Chemical International, 40 Rector St., N. Y. 6.

SOLVAY PROCESS DIVISION 85-70
Allied Chemical Corporation
61 Broadway, New York 6, N. Y.

Please send without cost:

☐ Brochure on Solvay Activated Hydrogen Peroxide Process.

☐ Call to discuss technical problem outlined in attached letter.

Name_____

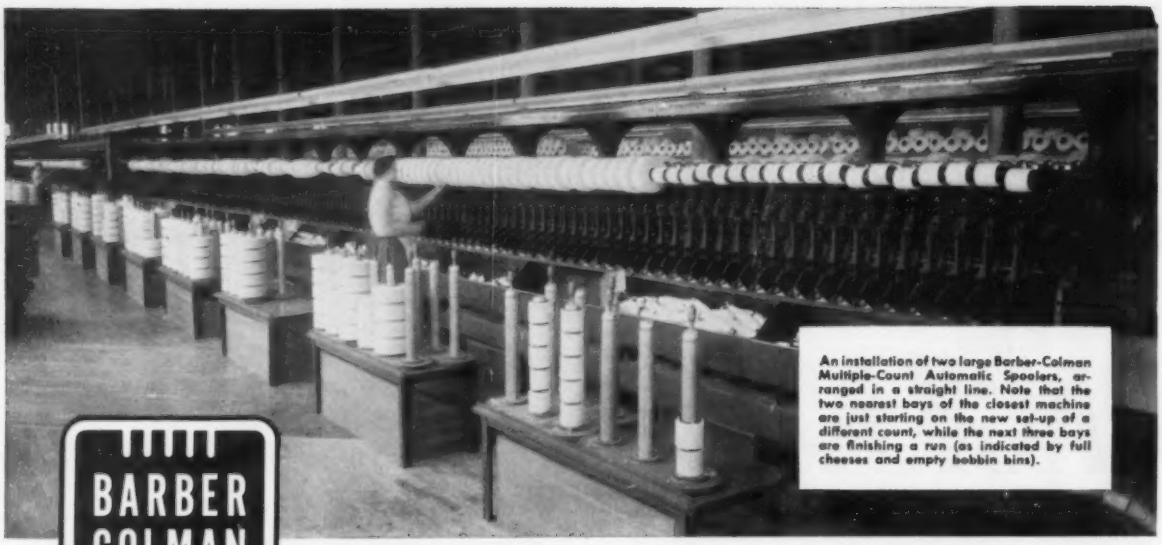
Position_____

Company_____

Phone_____

Address_____

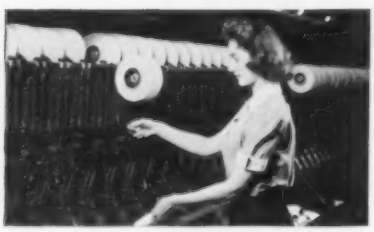
City_____ Zone____ State_____



An installation of two large Barber-Colman Multiple-Count Automatic Spoolers, arranged in a straight line. Note that the two nearest bays of the closest machine are just starting on the new set-up of a different count, while the next three bays are finishing a run (as indicated by full cheeses and empty bobbin bins).

BARBER COLMAN

Multiple-Count Automatic Spooler



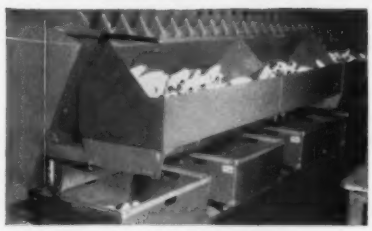
Spooler tender loading a full bobbin into the Spooler. The bobbin is dropped into a "pocket," and the yarn end is slipped into a spring clamp which positions it properly for the knotter to pick up.

Yarn man moving a trident of full cheeses from operator's table to a creel truck. He also returns tridents of starters, removes boxes of empty bobbins, and keeps full-bobbin bins supplied. Boxes under operator's tables are for tailings, and cheeses to be rewound.

Sale yarn mills and producers of piece goods that use various counts or different mixtures will find that this machine can be a very profitable investment. It is still the famous and the very familiar Barber-Colman Automatic Spooler, but with this difference: now you can wind . . .

A DIFFERENT COUNT EVERY NINE UNITS

The machine is built in "bays" between uprights that support the traveler track, with nine bobbin-to-cheese winding units on each side of each bay. Empty bobbins, instead of being conveyed to a single sorting table, drop into separate boxes under each bay, thus enabling each group of nine units to be used for a different yarn count. Individual operator tables service each bay. The only limitation is that the extremes of different counts on the machine at any one time must fall within the range of the knotter in the traveler. Yarn or count changes can, of course, be readily made at any time, and any number of bays can be run on identical yarns.



A close-up of the full-bobbin supply bins which are fixed to the machine, one bin for each nine winding units. The removable empty-bobbin boxes are shown on the floor below, also arranged so there is one box for each nine units. Note box location guides.

A close-up of several full-bobbin bins showing how dividers can be used to mark off separate runs. Labels tell contents.

AUTOMATIC SPOOLERS • SUPER-SPEED WARPERS • WARP TYING MACHINES • WARP DRAWING MACHINES

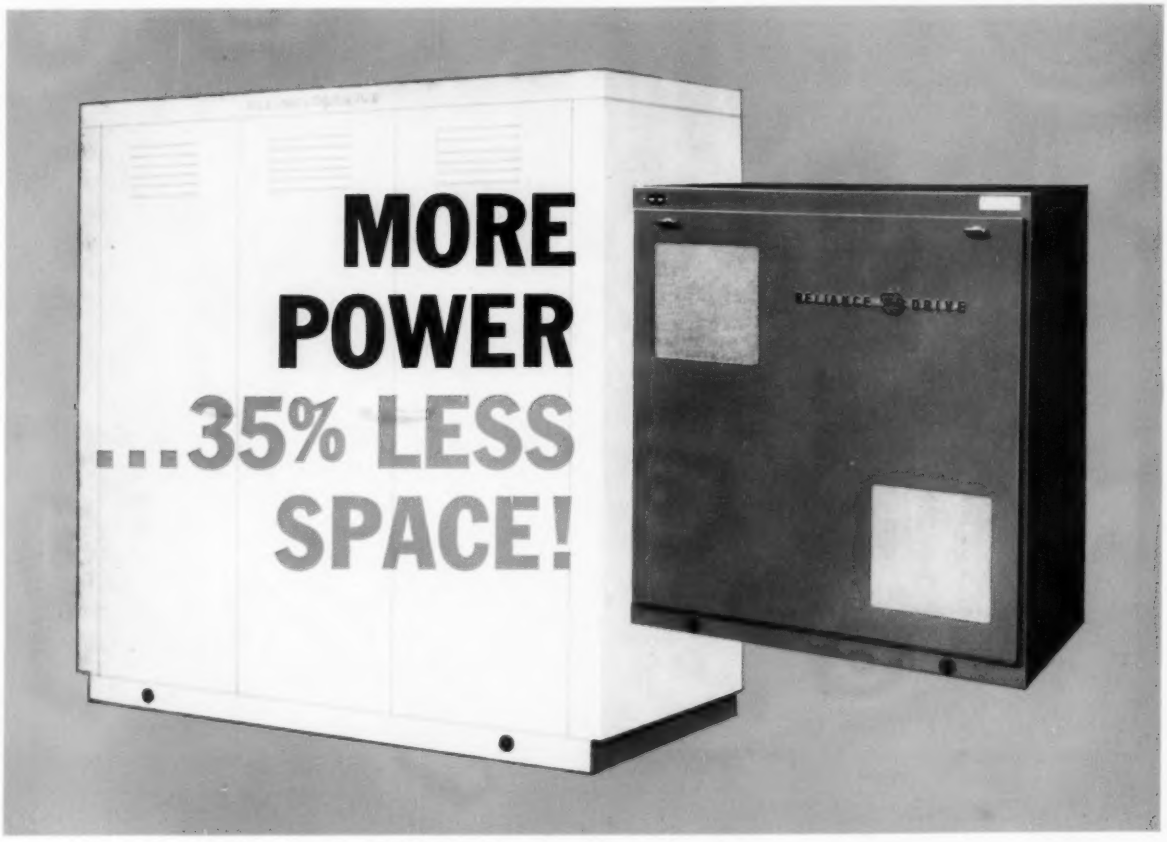
BARBER-COLMAN COMPANY

ROCKFORD • ILLINOIS • U. S. A.

FRAMINGHAM, MASS., U. S. A. GREENVILLE, S. C., U.S.A. MANCHESTER, ENGLAND MUNICH, GERMANY

INDIA	MEXICO	BRAZIL	JAPAN	PAKISTAN	PAKISTAN
Batliboi & Company, Forbes Street, Fort Bombay, India	J. Rabasa Isabel la Catolica 45-913 Apartado 7348 Mexico D.F., Mexico	Industria e Comercio de Maquinas S. A. "COMASA" R. Ghicerio, 537/547 Sao Paulo, Brazil	Do-Yei Shoji Kabushiki Kaisha Atlas Building (7th Floor) 11, Bingo-Machi, 3-Chome, Higashi-Ku Osaka, Japan	Associated Agencies (M'cr.) Ltd. Piccadilly House 11 Piccadilly Manchester 1, England	Associated Agencies (M'cr.) Ltd. 730, Muhammadi House, McLeod Road Karachi 2, Pakistan

Reliance Super 'T' V★S Drives



Both of these control units are rated at 50 horsepower! Actually, the new, small Super 'T' V★S cabinet packs more punch!

LIKE the Reliance Super 'T' Drive Motor, new V★S power units utilize Class B insulation, permitting a more compact unit. 100% overloads of one minute duration are accomplished without failure! Advanced design of ventilation keeps control and power units cooler . . . another reason why smaller size is possible. And service life is substantially extended.

Matched system design of drive motor, power unit and controls produces a highly efficient, integrated drive—to give you a wide range of stepless, variable operating speeds from a-c. circuits.

Super 'T' V★S Drives are available for immediate delivery. Check your Reliance salesman for delivery schedules on the full line, 1—350 hp., Bulletin Number D-2506, has been prepared to give you complete information. Write for it. D-1641

Product of the combined resources of Reliance Electric and Engineering Company and its Master and Reeves Divisions

RELIANCE ELECTRIC AND ENGINEERING CO.

DEPT. 207-A, CLEVELAND 17, OHIO

Canadian Division: Toronto, Ontario

Sales Offices and Distributors in principal cities

Duty Master A-c. Motors, Master Gearmotors, Reeves Drives, V★S Drives, Super 'T' D-c. Motors, Generators, Controls and Engineered Drive Systems.

choose them on form... and performance!

Another National Aniline exclusive . . . the only vat dyes available in the form of *non-dusting* flakes! They're recommended especially for package dyeing, and for printing, when so designated.

Carbanthrene Vat Flakes eliminate the dangers of freezing or drying out in storage, prevent loss of strength and shade change due to evaporation.

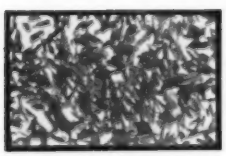
They're cleaner to weigh out, handle and use. They disperse quickly and completely.

Your dyeings are always clean and uniform, your formulas always precisely reproducible.

Samples of these Carbanthrenes and other vat flakes are available now:

Carbanthrene Direct Black RB Flakes · Carbanthrene Gray GFL Flakes · Carbanthrene Blue BCF Double Flakes · Carbanthrene Blue BCF Quadruple Flakes · Carbanthrene Ptg. Blue GCD Double Flakes · Brilliant Indigo 4BR Flakes · Carbanthrene Brown BR Double Flakes · Carbanthrene Khaki 2G Flakes · Vat Ptg. Brown G Flakes · Carbanthrene Ptg. Blue Green FFB Double Flakes · Carbanthrene Golden Orange GD Double Flakes · Carbanthrene Golden Orange 4R Double Flakes · Carbanthrene Golden Orange RRTD Flakes · Carbanthrene Red BN Double Flakes · Carbanthrene Red FBBD Double Flakes · Carbanthrene Red G2B Double Flakes · Carbanthrene Violet BNX Double Flakes · Carbanthrene Printing Violet 2R Flakes · Carbanthrene Flavine GCD Double Flakes · Carbanthrene Yellow GD Double Flakes · Carbanthrene Yellow PG Double Flakes

CARBANTHRENE® *Vat Flakes*



Non-dusting flakes of Carbanthrene Red FBBD, photographed same size, illustrate their unique form.

Carbanthrene Red FBBD Double Flakes were completely dispersed in tap water within nine seconds!

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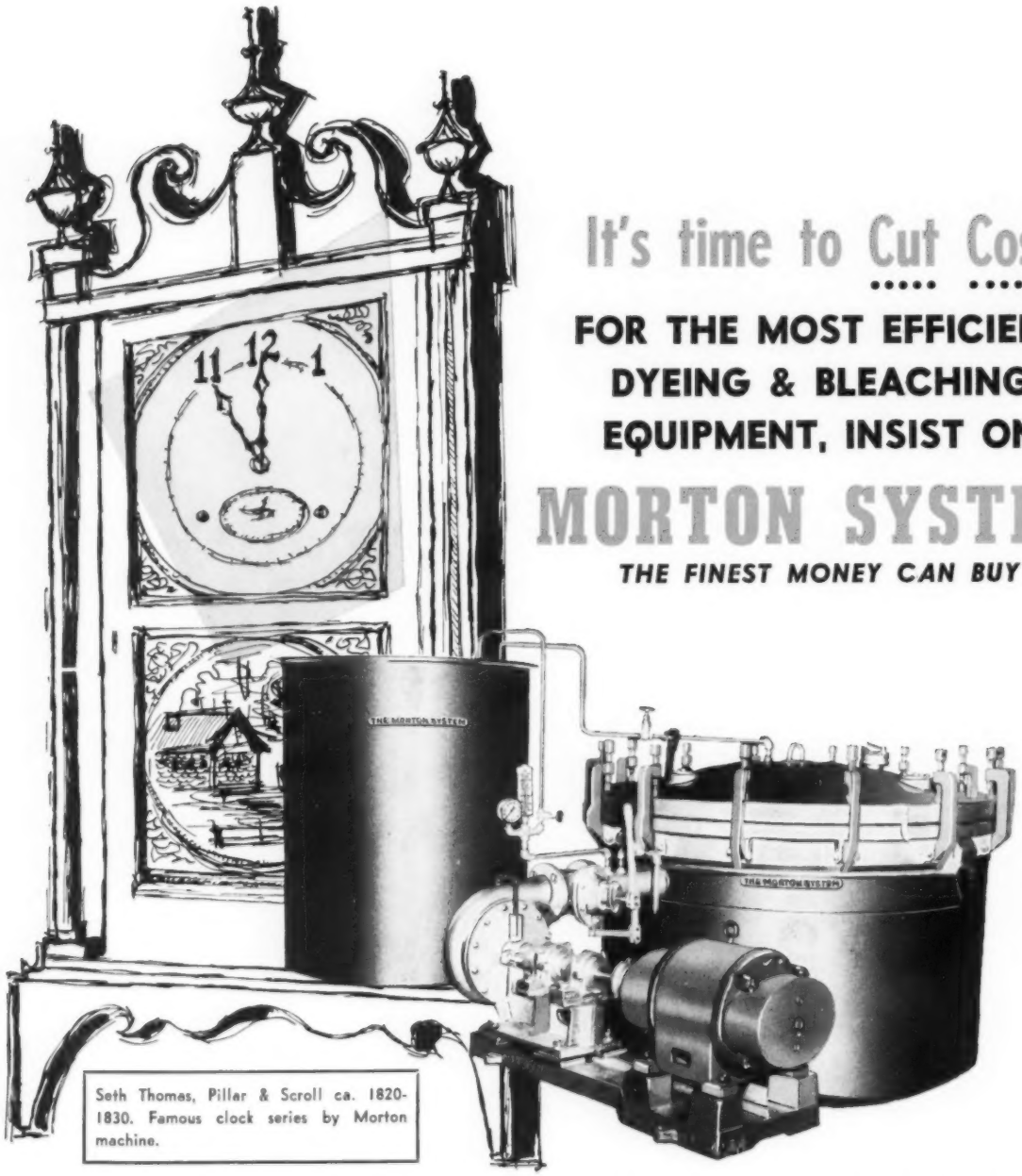


Seth Thomes, Pillar & Scroll ca. 1820-1830. Famous clock series by Morton machine.

It's time to Cut Cost

FOR THE MOST EFFICIENT DYEING & BLEACHING EQUIPMENT, INSIST ON

MORTON SYSTEM

THE FINEST MONEY CAN BUY

Morton System Stock Dyeing & Bleaching Machine

If you're thinking about new dyeing, bleaching and drying equipment, you should be thinking about the Morton System . . . it is absolutely the finest money can buy. Built to comply with ASME code specifications.

MORTON MACHINE WORKS, Inc.

COLUMBUS, GEORGIA, U. S. A.

Manufacturers of THE MORTON SYSTEM Machinery for Dyeing and Bleaching of:

BEAMS • PACKAGES • STOCK PIECE TOPS • VALVES • PUMPS • BEAM AND PACKAGE EXTRACTORS AND DRYERS • DYE BEAMS, ALL MAKES AND DESIGNS DYE TUBES • DYE SPINDLES • TUBE SPACERS • CUSTOM BUILT TANKS TO CUSTOMER'S SPECIFICATIONS

Quick delivery of the Drive you need!

Typical final assembly
of A-S Drives from completed sub-assemblies

When you purchase a Square D A-S Drive, you get a complete "package"—including drive motor, operator's station and all controls. You also get these important advantages:

QUICK DELIVERY • Square D's unique method of stocking sub-assemblies means quicker deliveries of packaged drives to meet your requirements.

EASY INSTALLATION • Maintenance manuals are complete in every detail, including step-by-step installation instructions. Moreover, each **A-S Drive** is completely factory-tested and adjusted when shipped — only a few trimming adjustments are needed to put it in operation.

MINIMUM MAINTENANCE • Industrially rated components are used throughout, and extra-sturdy cabinets give lasting protection. Static elements and encapsulated circuits—which are virtually maintenance-free — are utilized wherever possible.

EXTRA SAFETY • Only push buttons with heavy-duty construction and potentiometers with industrial clearances are used in operator's stations, for maximum personnel safety.

WIDE VARIETY AVAILABLE • There's a Square D "package" for *any* adjustable-speed job. You can choose from electronic, magnetic amplifier or motor-generator types — with ratings from 1/20 to 400 hp — and with accuracies to within fractions of 1%.

FIELD APPLICATION HELP • Square D has wide experience in the design and manufacture of adjustable-speed drives, and field specialists are trained to help you in the selection of the proper drive.

Write FOR BULLETIN • *Square D Company, 4041 North Richards Street, Milwaukee 12, Wisconsin*

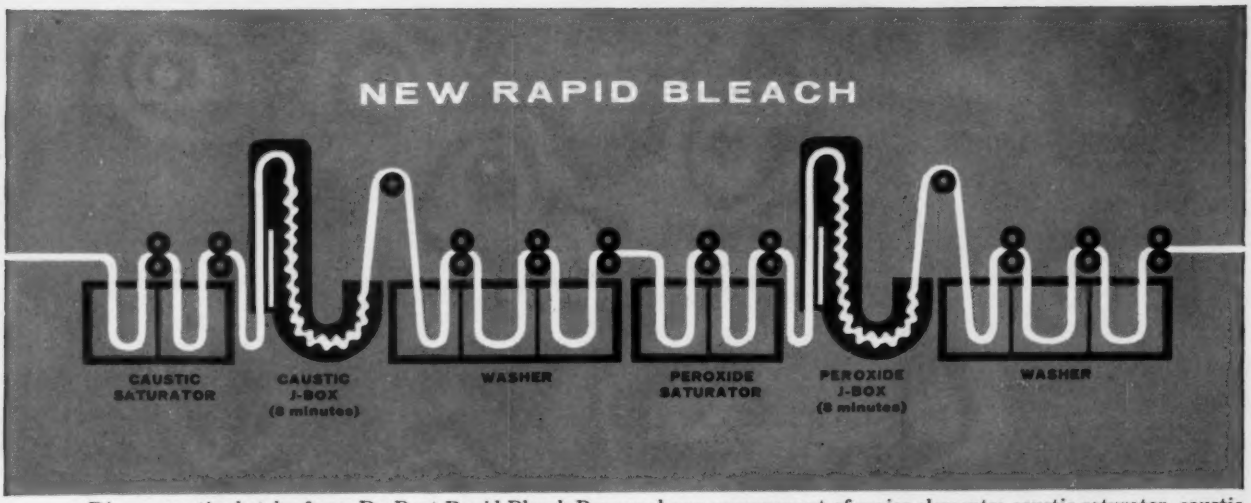
SQUARE D COMPANY

wherever electricity is distributed and controlled

Du Pont's New Rapid Bleach Process Cuts Bleaching Costs... Improves Dyeing Quality

DU PONT
REG. U. S. PAT. OFF.

ALBONE® hydrogen peroxide **SOLOZONE**® sodium peroxide **PERDOX**® sodium



Diagrammatic sketch of new Du Pont Rapid Bleach Process shows arrangement of major elements: caustic saturator, caustic J-box, washer, peroxide saturator, peroxide J-box and final washer. Operation saves time, cuts operating costs. It can be used for medium-weight cotton fabrics and is especially suitable for hard-to-handle heavyweight fabrics that are susceptible to bruising.

Production-scale operations prove the superiority of the Du Pont Rapid Bleach Process over conventional methods for preparing heavy cotton fabrics for dyeing and finishing . . . at a lower cost.

The new Du Pont Process (shown above) prepares fabrics for finishing with high absorbency and exceptionally good dye receptivity. You obtain high color values and much greater clarity from the dye colors used. And you do it faster and easier.

Du Pont Rapid Bleach is a continuous process . . . specifically designed for medium to heavyweight fabrics. It's unique, simple and fast. Has caustic pre-treatment in the first J-box. The new two-stage process reduces cloth storage time to as little as 8 minutes in each J-box. Makes substantial savings possible over batch methods.

This new method introduces an open-width, continuous process designed for the preparation of sensitive fabrics (such as twills, drills, poplins, etc.) for dyeing. It reduces seconds and rejects due to bruises, rub marks and creases and can be readily adapted to any continuous, or semi-continuous, open-width system.

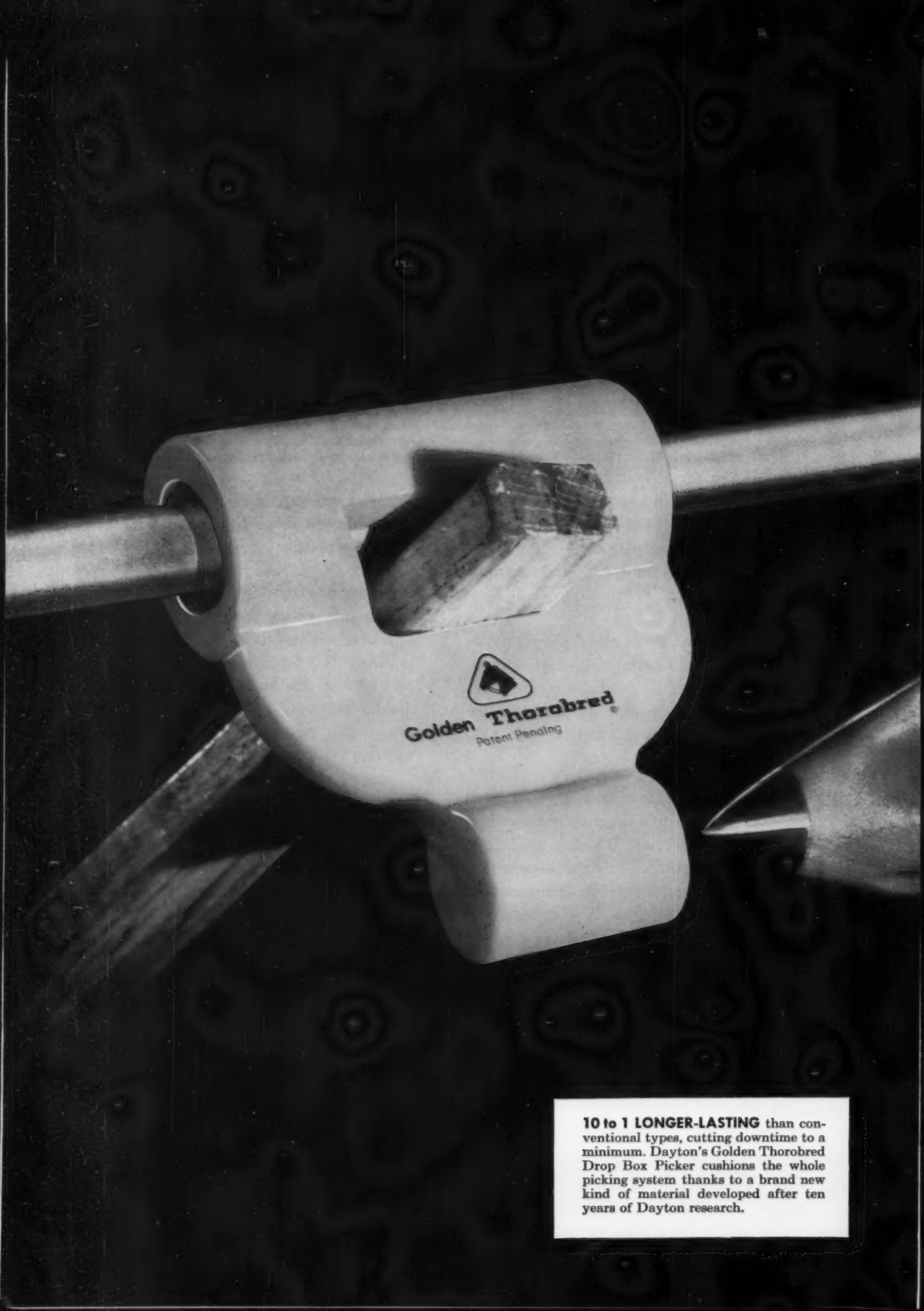
If you'd like more information on new Rapid Bleach, call your Du Pont Representative. He's a specialist in textile bleaching and will be glad to show you how this new process may profitably fit into your mill.

DU PONT BLEACHING PRODUCTS

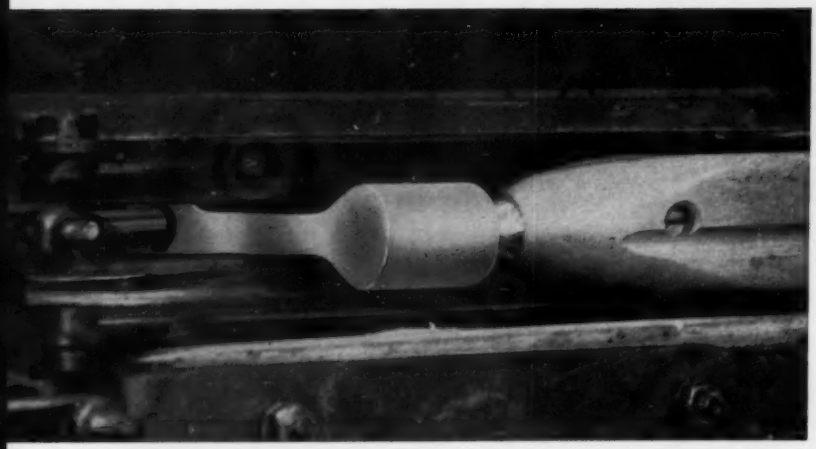
assure you of the best bleaching results every time. They help speed bleaching operations more economically. They're thoroughly tested and proved out in successful mill operation. All are readily available from convenient shipping points to assure prompt delivery. Du Pont, Electrochemicals Department, Peroxygen Products Division, Wilmington 98, Delaware.

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

borate perhydrate **OXONE®** monopersulfate compound **SODIUM PERBORATE**



10 to 1 LONGER-LASTING than conventional types, cutting downtime to a minimum. Dayton's Golden Thorobred Drop Box Picker cushions the whole picking system thanks to a brand new kind of material developed after ten years of Dayton research.



EVERY WEAR POINT is cushioned by amazing elastomer properties of the Golden Thorobred. This amazing cushioning protects the shuttle from wear and the shuttle-point from loosening. Yet it withstands today's increased punishment from heavier shuttles. It cuts wear on the picker stick, too, with shock-absorbing qualities that take terrific impacts, minimizing breakage and repair parts costs.

REPLACEABLE BUSHINGS QUADRUPLE LIFE of Dayton's Golden Thorobred. Dayton's smooth-running Daylube bushings are easily and economically replaced to give Dayton's Golden Thorobred Drop Box Picker record performance, performance unheard of only a few years ago.

OUTLASTS OLD STYLE DROP BOX PICKERS 10 TO 1

Dayton research revolutionizes Drop Box Picker performance

Dayton's Golden Thorobred Drop Box Picker is amazing mill superintendents and overseers in test after test, outlasting all conventional types 10 to 1 and out-performing them in economies. The Golden Thorobred is a real step forward in savings in loom downtime and picker replacement cost—a real dollar-saver that sets new economy records.

Ask your Dayco Representative to set up a trial installation. Phone or write Dayco Textile Products Co. (Formerly Dayton Rubber Co., Textile Division) 401 S. C. National Bank Bldg., Greenville, S. C.

Dayco TEXTILE PRODUCTS CO.

Division of Dayco Corporation

OVERSEAS PLANT: THE DAYTON RUBBER CO. LTD., DUNDEE, SCOTLAND

New Elastomer makes big change in Drop Box Pickers

• • •

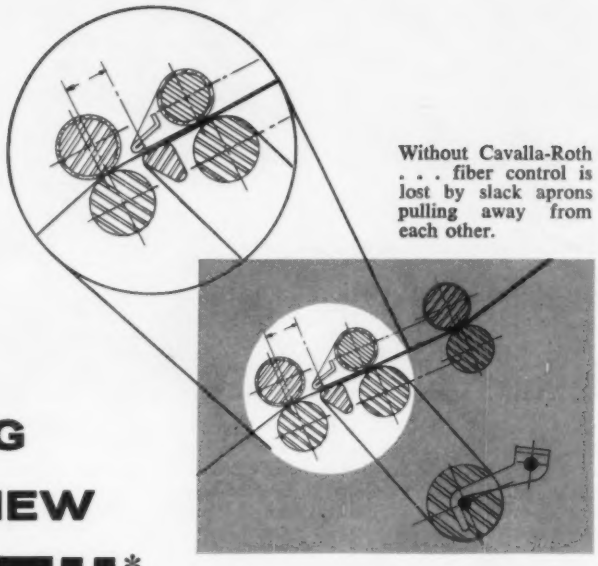
THE PASSING of one old timer and the restoration of another is the story behind the formulation of Dayton's Golden Thorobred Drop Box Picker. For, with the coming of this virtually indestructible new elastomer, the costly, old-time raw-hide picker made of water buffalo is now retired to the museums.

But, sometimes the coming of the new can *restore* the old, too. For all the toughness of the new Golden Thorobred Drop Box Picker—10 to 1 over all conventional kinds—it is gentle enough to permit the return of the hickory stick, replaced so extensively by the rigid laminates. This is a real boost to weaving because the slight whip of hickory is of great help to the shuttle. In the old days, abrasive pickers could cut the hickory in two.

The unusual "give" of the Golden Thorobred explains its longer-life and the elimination of so much of the downtime caused by ordinary pickers. Its cushioning action spares cast iron parts, too, a problem cost-finders and maintenance men long sought to have solved. And, of course, its capacity to absorb the punishment of today's heavier shuttles is one of its prime features.

Textile men also like the fact that Dayton's Golden Drop Box Picker bears a "Made in America" brand-mark in these days when textile imports of all kinds are effecting the market.

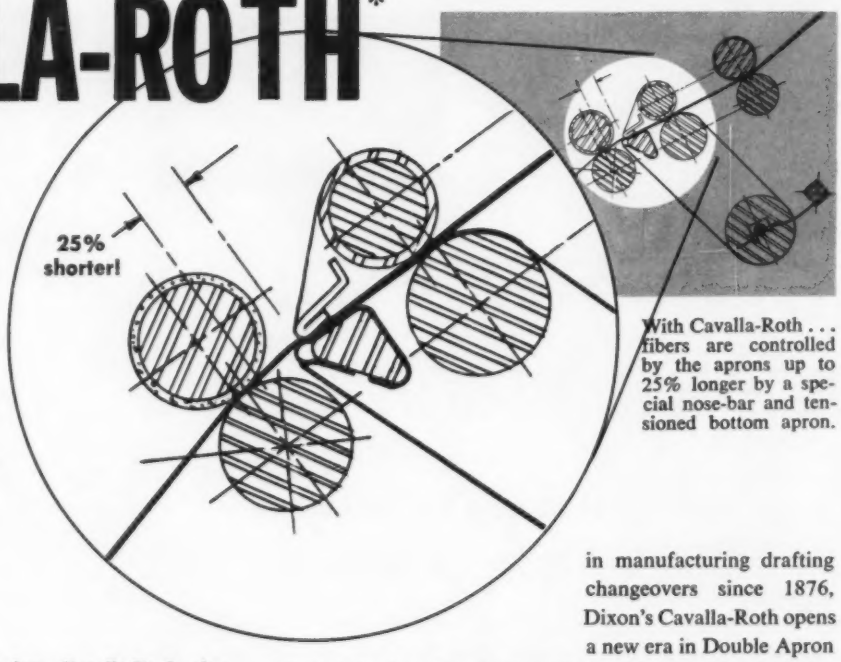
FIRST SHOWN AT ATLANTIC CITY



Without Cavalla-Roth . . . fiber control is lost by slack aprons pulling away from each other.

ADVANCE YOUR DUO-ROTH® SPINNING WITH Dixon's NEW

CAVALLA-ROTH*



With Cavalla-Roth . . . fibers are controlled by the aprons up to 25% longer by a special nose-bar and tensioned bottom apron.

Now . . . with Dixon's Cavalla-Roth . . . mills using Duo-Roth Spinning can obtain greatly improved fiber evenness and strength with very little investment per spindle. Cavalla-Roth consists of a specially-shaped apron nose-bar or nose-bar clip coupled with a spring tensioning system for the lower apron.

Cavalla-Roth assures controlled spacing between top and bottom aprons at the point of fiber exit . . . reduces up to 25% the uncontrolled space between the nip of the aprons and the bite of the front rolls. Because the bottom apron is under controlled tension, Cavalla-Roth also insures full contact between the two aprons along their entire surfaces — for better fiber control!

Cavalla-Roth results in markedly improved yarn quality . . . sets a new high standard of comparison for the industry. Equipment requires but a few minutes for installation — and is very economical. Based on experience gained in manufacturing drafting changeovers since 1876, Dixon's Cavalla-Roth opens a new era in Double Apron Roth Spinning. See for yourself how Cavalla-Roth can give you more uniform, stronger, finer quality yarns . . . make an installation on your frames now!

For details write

Dixon Corporation — Bristol, Rhode Island

Plants in R. I. and Charlotte, N. C.

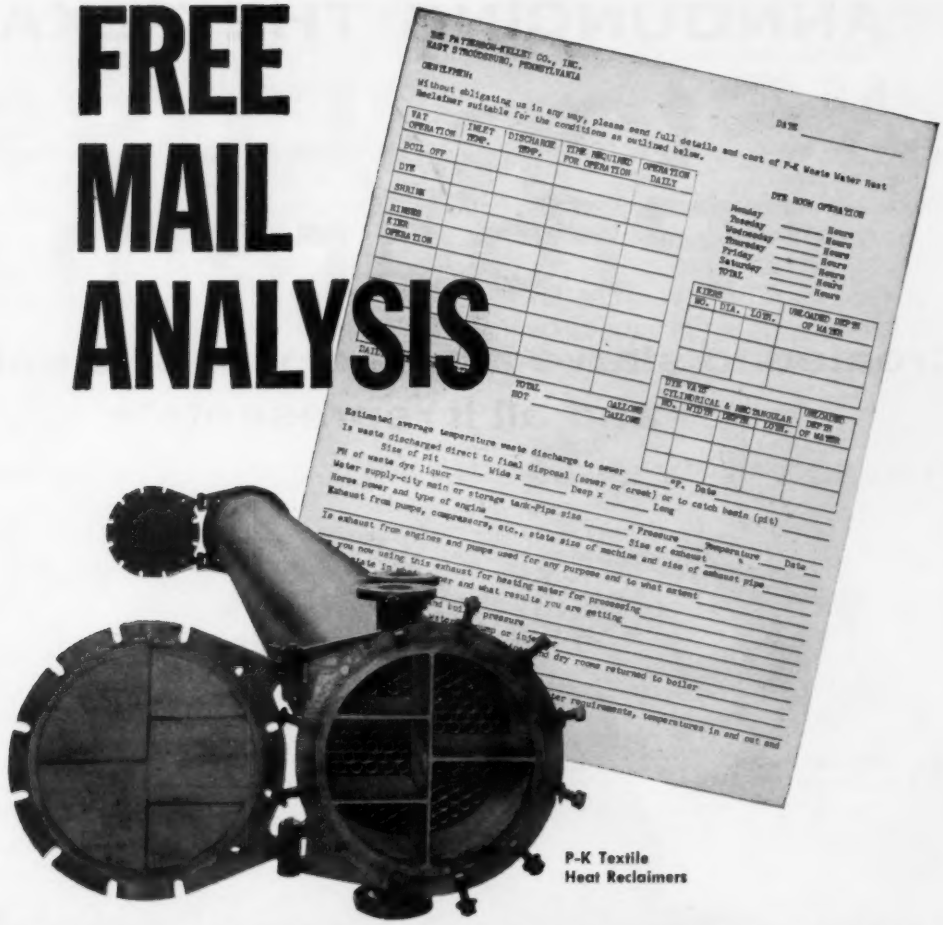
Sales and Service representatives throughout the Industry.

*Pat Applied for
® Saco-Lowell T.M.

Dixon

ENGINEERED SPINNING CHANGEOVERS SINCE 1876

FREE MAIL ANALYSIS



P-K Textile
Heat Reclaimers

RECOVER 25-50% WASTE HEAT

A simple economy takes place with P-K Textile Heat Reclaimers. Waste hot water pre-heats incoming cold water. This recovers 25-50% waste heat. It reduces fuel costs. It increases boiler capacity. Savings run $8,000 a year and more. Installations pay for themselves completely in as little as nine months!

P-K Textile Heat Reclaimers are custom fitted to the needs of each mill. Single unit construction saves valuable floor space. Quick opening doors simplify inspection, minimize downtime. A patented P-K Roto-Screen traps lint, scum and other fouling agents. Point by point they reflect the unmatched experience, care and responsibility of the largest and oldest manufacturer in the field.

FREE MAIL ANALYSIS. We'd be pleased to estimate the advantages of a P-K Reclaimer for your own mill. Our special mail analysis form makes it easy. You simply outline your conditions to us. We send our estimates to you by return mail. Too, we'd be glad to discuss the advantages of complete modernization from steam injection to a continuous hot water system. No obligation. Just return the coupon.

TYPICAL CASE HISTORIES:

At Stanley, N. C., the Textile Division of Talon, Inc. obtained a needed increase in hot water capacity, improved product quality and saved $1,000 a month in fuel costs with a P-K Reclaimer and a 7,000 gal. P-K accumulator tank.

At Bangor, Pa., the Blue Ridge Textile Co. saved $8,000 a year on fuel costs. P-K Reclaimer located outside dye house paid for itself in nine months.

20

Patterson Kelley
Laundry and Textile Division

P-K Steam Mixers • P-K Boiler Return Systems • P-K Heat Exchangers •
P-K Pre-Krete Lined Storage Water Heaters

PATTERSON KELLEY CO., INC.
121 WILSON STREET
EAST STROUDSBURG, PENNSYLVANIA

Please send your special mail analysis form and literature on P-K Textile Heat Reclaimers.

We use steam injection for heating water No ☐ Yes ☐

Name_____ Title_____

Company_____

Street_____

City_____ Zone_____ State_____

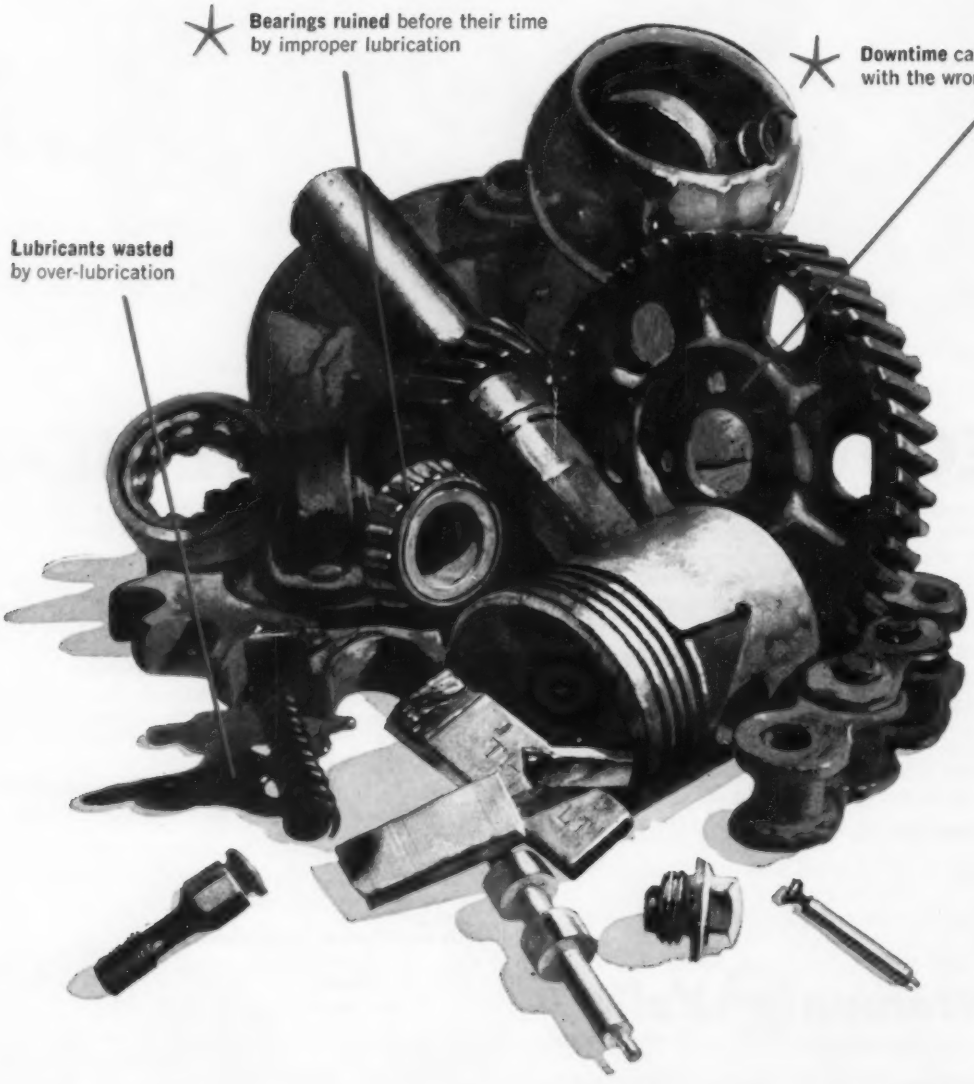
ANNOUNCING THE TEXACO "Stop Loss" Program

Created to starve a scrap pile at its source . . . and all it represents ★

★ **Bearings ruined** before their time by improper lubrication

★ **Downtime** caused by a man with the wrong grease gun

★ **Lubricants wasted** by over-lubrication



LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

Even though your mill is *already* an efficient operation, a Texaco "Stop Loss" Program can yield important savings in maintenance, production, purchasing and inventory.

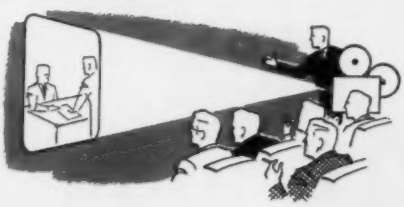
What it is; why it will work for you. The Texaco "Stop Loss" Program is a complete package specifically designed to modernize your lubrication practices—to keep pace with your updated production and marketing procedures. "Stop Loss" is based on our years of experience in organizing lubrication in industry.

If yours is an average mill, the adoption of this program will actually show up on your profit sheet. That's because the savings from "Stop Loss" go *directly* into net profits.

Lubrication, far from being an expense item, is actually one of your most effective cost control tools!

HERE'S WHAT YOU NEED TO HELP STARVE YOUR SCRAP PILE

These components of the Texaco "Stop Loss" Program are available to interested mill groups:



1. New 20-minute sound-color film "Stop Loss with Organized Lubrication"—created to show the many opportunities for cost control through organized lubrication practices.

2. A Lubrication Control System that takes the guesswork out of lubrication scheduling. It costs almost nothing to install, yet can save as much as 15% of your maintenance costs.

3. A film "package" for mill departments. This consists of educational films that cover the selection and application of greases, hydraulic oils, cutting oils, etc.

4. Co-ordinated booklets on the film subjects plus many others that can be used as guides in specific areas.

We believe that a modern Texaco "Stop Loss" Program will produce a package of economies in your mill.

MAKE YOUR RESERVATION TODAY
to see one of the year's most important management movies!

TEXACO
Throughout the United States
Canada • Latin America • West Africa

TEXACO INC., Dept. TI-20
135 East 42nd Street
New York 17, N. Y.

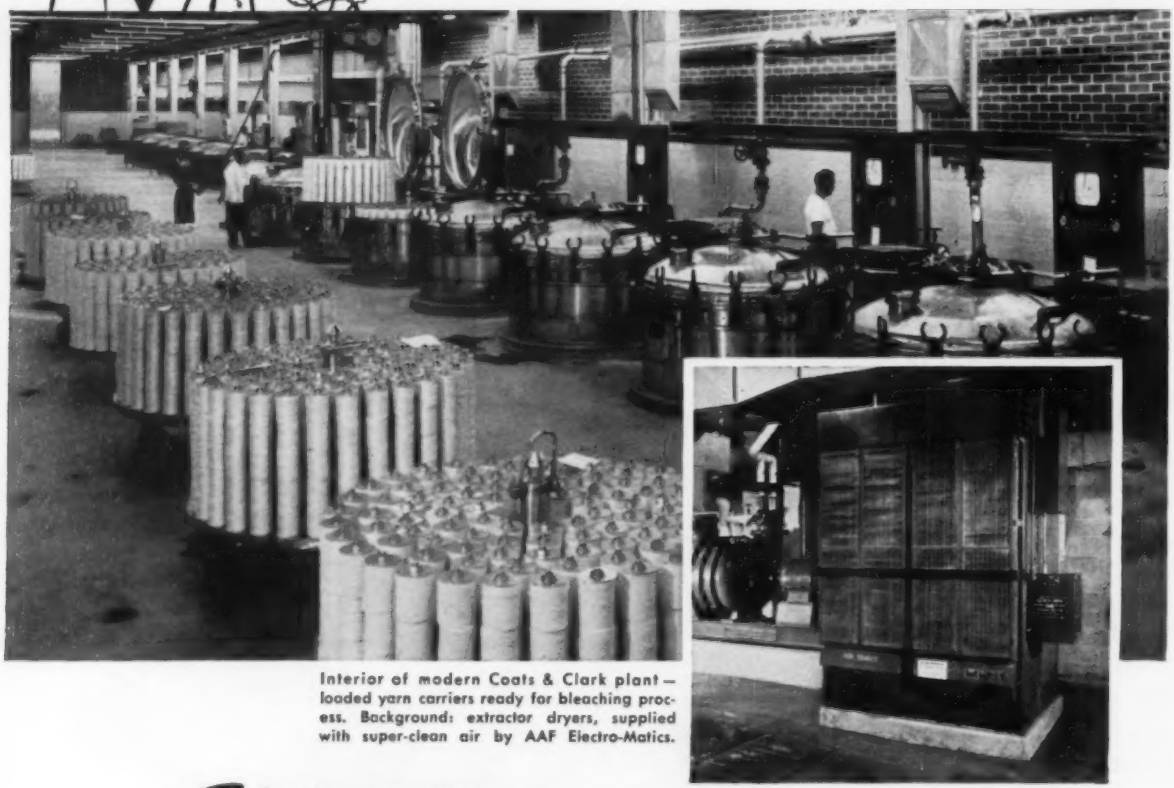
Please arrange a showing of "Stop Loss" at my mill.

Name_____

Title_____

(Please attach to your letterhead)

Off Color Yarns
NOT ALLOWED HERE!



Interior of modern Coats & Clark plant — loaded yarn carriers ready for bleaching process. Background: extractor dryers, supplied with super-clean air by AAF Electro-Matics.

Electro-MATICs Supply Super-clean Air for Drying at Coats & Clark Plant

It takes more than just ordinary clean air to protect yarn against discoloration during the drying operation. That's why Coats & Clark, Inc., Toccoa, Georgia, demanded *super-clean* air. And that's why they insisted on AAF Electro-Matic filters.

Electro-Matic eliminates the most minute dust particles. And there's no lowering of efficiency because of dust accumulation. Electro-Matic cleans *itself*, automatically, while it cleans the air . . . provides *maintained efficiency* around the clock, around the calendar.

If your operations demand *constant* super-clean air, then you need AAF's Electro-Matic, today's finest electrostatic air filter. For complete information, call your local AAF representative, or write direct for Bulletin 250. Address: Mr. Robert Moore, American Air Filter Company, Inc., 275 Central Avenue, Louisville, Kentucky.

AAF **American Air Filter**

BETTER AIR IS OUR BUSINESS

IN CARPETS...

IN TIRES...

IN SEAT BELTS...

IN FIRE HOSE...

CAPROLAN...TOUGH YARNS FOR TOUGH JOBS

Caprolan nylon heavy yarns are also used in conveyor belts, seine twine, cordage, upholstery, and dozens of other end uses . . . where toughness, strength, and flexibility are imperative. The all-round excellence of Caprolan heavy yarns includes an amazing affinity for virtually all classes of dyestuffs and compatibility with every kind of texturing process.

High-performance Caprolan nylon heavy yarns, pioneered and developed by Allied Chemical, are making an ever-increasing contribution to textile progress in a wide diversity of home and industrial uses.

If you have a tough job, we have the tough yarn for it. Whether it is improving an existing product, or creating a new one, let us help you with our wide range of deniers in Caprolan nylon heavy yarns.

caprolan®

THE NYLON FIBER BY ALLIED CHEMICAL

Allied Chemical

Fiber Marketing Dept., National Aniline Division, 261 Madison Ave., New York 16, N.Y.

MIRACLE SIZE FOR MIRACLE BLENDS

Kofilm

ACETYLATED STARCH DERIVATIVE

KOFILM gets new blends off to a fast start. Eliminates start-up adjustments and shutdowns. Permits high-speed weaving of *any* blend of fibers—from the newest to the oldest.

KOFILM is a noncongealing, chemically-treated starch warp size. It forms exceptional films. High in strength. Extremely flexible. Very tough. Insures top efficiency the way no other starch can.

KOFILM is quick and simple to use. A National Textile Specialist will be glad to demonstrate its advantages. Write or call your nearest National office to make arrangements.

National STARCHES

NATIONAL STARCH and CHEMICAL CORPORATION

750 Third Avenue, New York 17 • 3641 So. Washtenaw Avenue, Chicago 32 • 735 Battery Street, San Francisco 11

Another product in Gates complete line of Textile Accessories

Leading Mills* choose this Gates Loop Picker

Super Vulco Picker

Newest addition to Gates line of pickers. Pale pink color. Excellent for intermediate applications requiring both economy and durability.

There's a Gates Picker for Every Loom . . .

Vulco Picker

Molded of rubberized fabric . . . low cost. Designed for use in weaving cottons and specialty-type fabrics where low initial picker cost outweighs all other factors.

First in the Gates line of 3 outstanding loop pickers is Tex-Hide . . . a product of Gates Specialized Research.

Tex-Hide is a super-tough, highly resilient material that assures you of exceptionally long service life for Loop Pickers.

Because Tex-Hide provides all the shock absorbing capacity and resilience of natural leather, smoother loom operation over a longer period is assured.

Highest quality in cloth is maintained, and down time costs greatly reduced, for these 2 reasons:

1. **Maximum Resilience and Shock-Absorbing Capacity**—*catches the shuttle without bouncing; thus preventing filling thread from breaking or sluffing off bobbin.*
2. **Coolness**—*by running cool, the heat generated in catching and throwing the shuttle is dissipated more rapidly.*

For better, faster, more economical production, equip your looms with Gates complete line of *specially engineered* accessories . . . available from Gates Textile Distributors.

*Names supplied upon request.

The Gates Rubber Company

Denver, Colorado

Gates Rubber of Canada Ltd., Brantford, Ontario

Gates Distributors are in the YELLOW PAGES

The Mark of Specialized Research

Gates®

Take-up Roll Coverings
Card Bands
Cone and Evener Belts
Spinning Frame Drives

Reversible Pickers

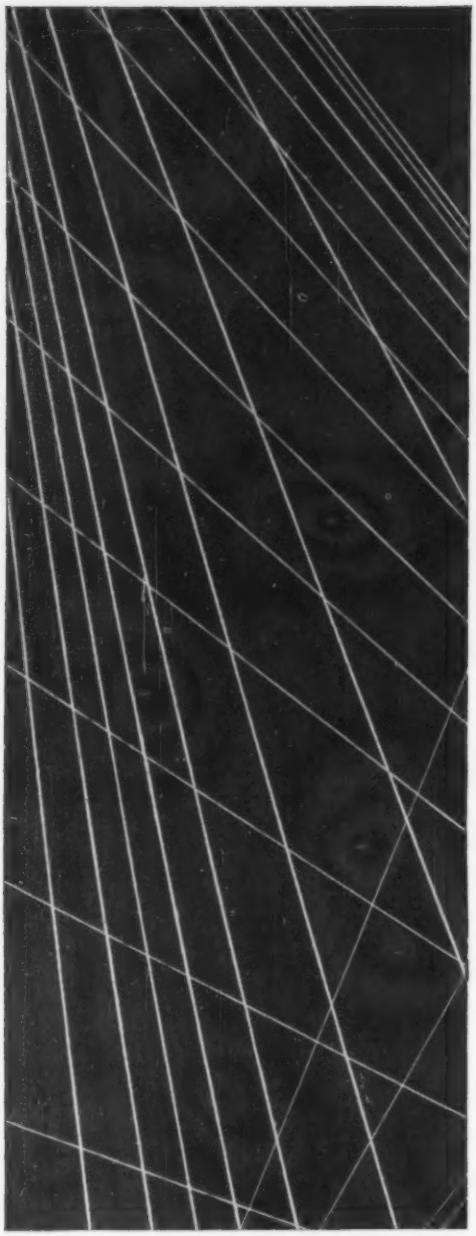
Tex-Hide Harness Straps

Thin-Tex, Vulco, Tex-Hide and Super Tex-Hide Lug Straps

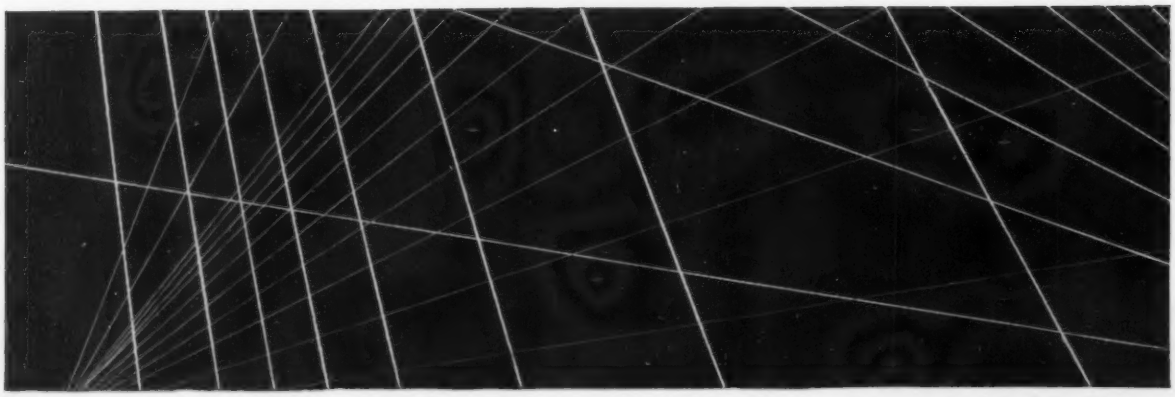
4-in-one Check Straps Multi-Check Straps

TPA 903

Gates Textile Accessories



NOW ! Three New Fibers !



3 NEW MODIFIED AVISCO RAYON FIBERS

AVRIL*

STABLE RAYON

A new rayon fiber, similar to cotton with respect to elongation and elastic properties. Blends beautifully with cotton or synthetics and can be readily Sanforized or mercerized. It doesn't require special finishing equipment or techniques.

AVLIN*

MULTICELLULAR RAYON

A new modified Avisco rayon fiber—the only fiber of its kind now available. Avlin has a unique self-bonding characteristic, creating a new firmness and bulk in fabrics.

AVRON*

HIGH STRENGTH RAYON

A high strength rayon staple fiber which can be used 100% or blended with cotton and other man-made fibers. Its strength makes possible the spinning of finer yarns and also creates a strong and durable yarn for the home furnishings industry. Avron rayon is much stronger after repeated washings when wash and wear finishes have been applied than a comparable 100% cotton fabric with a wash and wear finish. Fabrics have a soft, luxurious hand and colors are rich and lively.

The names AVRIL, AVLIN, and AVRON may be used in fabrics of 100% rayon or in blends which meet American Viscose Corporation standards of quality control.

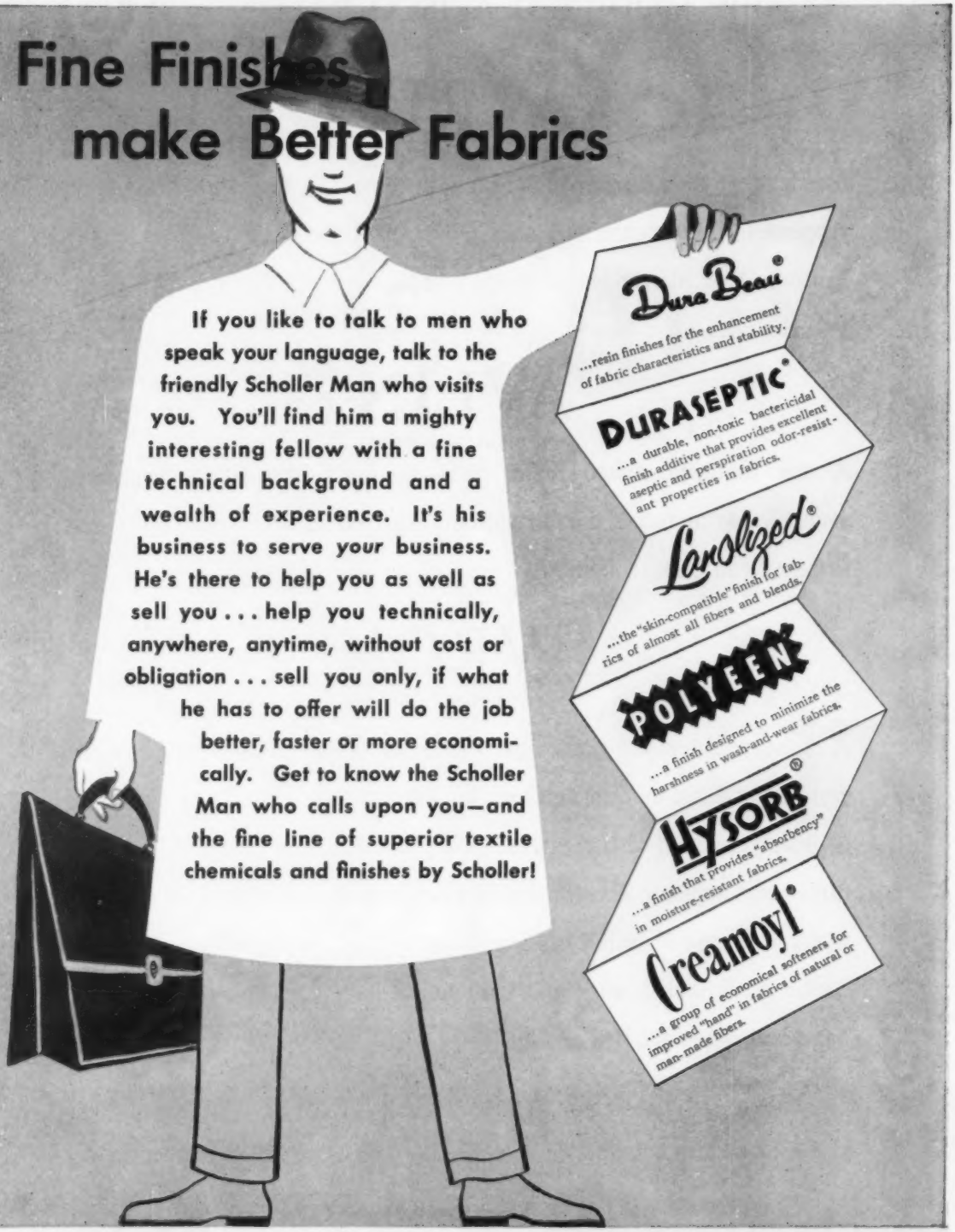
**AVRIL, AVLIN, and AVRON are trademarks of American Viscose Corporation.*

AVISCO®

RAYON • ACETATE • CELLOPHANE

AMERICAN VISCOSE CORPORATION, 350 Fifth Avenue, New York 1, New York

Fine Finishes make Better Fabrics



If you like to talk to men who speak your language, talk to the friendly Scholler Man who visits you. You'll find him a mighty interesting fellow with a fine technical background and a wealth of experience. It's his business to serve *your* business. He's there to help you as well as sell you . . . help you technically, anywhere, anytime, without cost or obligation . . . sell you only, if what he has to offer will do the job better, faster or more economically. Get to know the Scholler Man who calls upon you—and the fine line of superior textile chemicals and finishes by Scholler!

Dura Beau® ...resin finishes for the enhancement of fabric characteristics and stability.

DURASEPTIC® ...a durable, non-toxic bactericidal finish additive that provides excellent aseptic and perspiration odor-resistant properties in fabrics.

Lanolized® ...the "skin-compatible" finish for fabrics of almost all fibers and blends.

POLYEEN® ...a finish designed to minimize the harshness in wash-and-wear fabrics.

HYSORB® ...a finish that provides "absorbency" in moisture-resistant fabrics.

Creamoyl® ...a group of economical softeners for improved "hand" in fabrics of natural or man-made fibers.

Scholler BROTHERS, INC.

PIONEERS IN THE BETTER FINISHES THAT MAKE THE BETTER FABRICS... SINCE 1907

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Manufacturers of Textile Finishes, Resins, Softeners, Detergents, Soaps, Oils and Specialties.

AT THE ELBOW OF THE MILL MAN EVERY HOUR

S-W ROLL EXPERIENCE

that brings improved processing with new products like

SEALSKIN® Slasher Rolls

which outlast other covers by 100% in most cases, which are reported to last up to 25% longer between grindings, which are described in the S-W "Sealskin" Bulletin.

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Newton Upper Falls, Mass.

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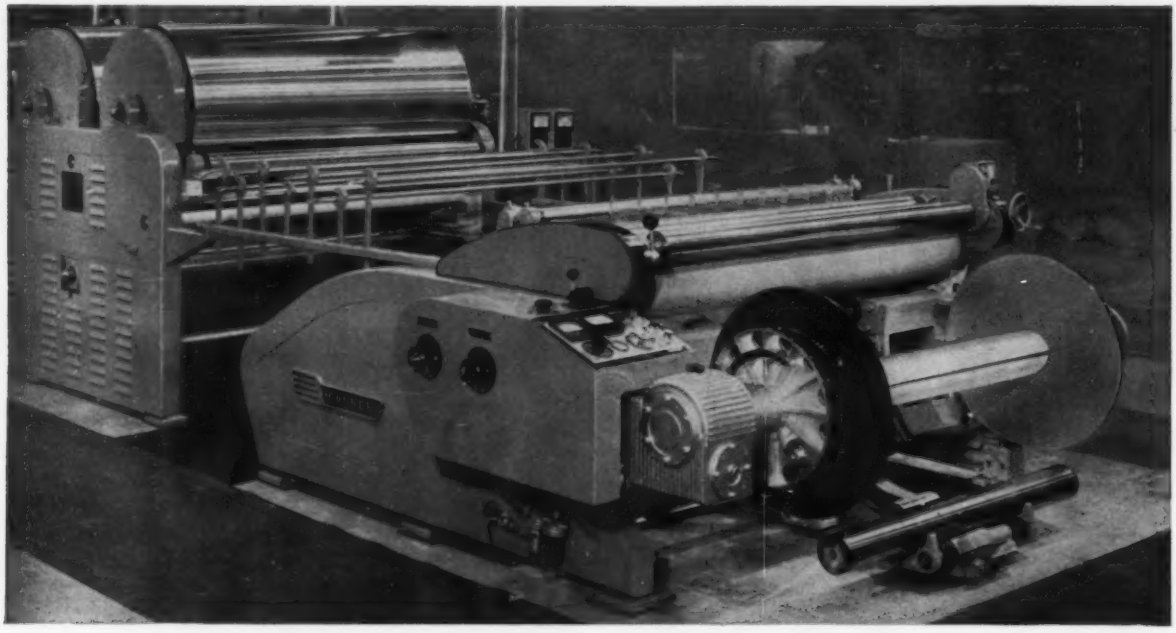
"How to Get Longer Life from a Rubber Covered Roll" — will be sent to you upon request.

MODERN COCKER



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WHY COCKER SLASHERS ARE WORTH MORE

The New Cocker G H Slasher • Production up to 1600 lbs./hr.

WORTH MORE IN PRODUCTION AND ECONOMY Consistently, over the years, Cocker Slashers have offered valuable extras . . . not incorporated in other equipment until years later . . . which produce more and better warps for less money.

WORTH MORE IN YEARS OF SERVICE Due to their advanced features, Cocker Slashers will serve you efficiently for years after other equipment has become obsolete.

WORTH MORE IN DEPENDABILITY Rugged construction and Cocker's unmatched reputation for prompt service assure uninterrupted operation. With hundreds of looms depending on one slasher you can't afford less than Cocker dependability and service.

No slasher, *regardless of price,* is a bargain unless it has all of the most modern features and only the Cocker Slasher is now . . . as it has always been at any time . . . the only completely modern slasher on the market.

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WORLD'S LARGEST DESIGNERS AND BUILDERS OF COMPLETE WARP PREPARATORY EQUIPMENT

Sparkling whites
Outstanding whites
Brighter whites
Blancophor® whites
(optical whiteners)
Blancophor optical whiteners now offer textile manufacturers a complete range of desirable brightener characteristics. High bleached whites on cotton, rayon, and other cellulosic fibers can now be upgraded to *outstanding whites* by a "quick dip" as well as by conventional methods.
Blancophor GS Brands
Our newest offering... feature
Substantivity for cellulosic fibers
Blue fluorescence
Medium exhaust
Good leveling
Ready solubility in water
Blancophor CB Brands
A new addition to this series... feature
Outstanding stability over a broad pH range
Blue fluorescence
Slow exhaust
Good leveling—can be "salted on" for even results
Ready solubility in water
Blancophor HS Brands
The industry standard... feature
Good all-round brightening characteristics
Violet-blue fluorescence
Slow exhaust
Excellent leveling
High water solubility
All of the Blancophor brighteners are compatible with the ordinary resin finishes in current use and are ideally suited for pad application.
Blancophor brighteners are available in powder and liquid form. The liquid products are supplied in specially designed polyethylene-lined fiber drums equipped with a handy spigot. Bulk quantities can be supplied.
Samples, literature, and technical assistance are available on request. Ask at any Antara office.
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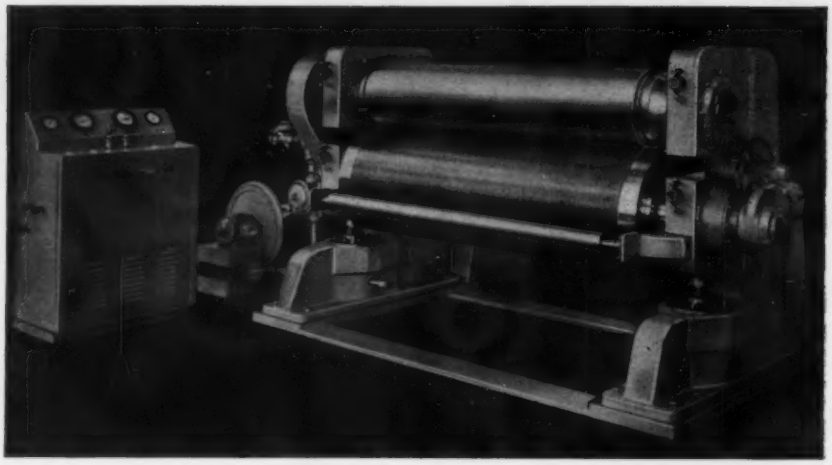
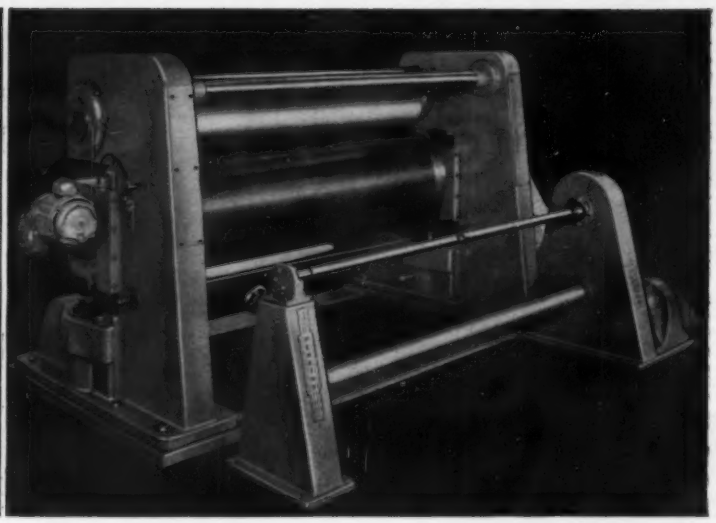
ANTARA CHEMICALS
A SALES DIVISION OF GENERAL ANILINE & FILM CORPORATION
435 HUDSON STREET, NEW YORK 14, NEW YORK
SALES OFFICES: New York • Providence • Philadelphia • Charlotte • Chattanooga • Chicago • Portland, Ore.
San Francisco • Los Angeles. IN CANADA: Chemical Developments of Canada, Ltd., Montreal
Blancophor brighteners, manufactured by General Aniline & Film Corporation, are sold outside the United States by distributors all over the world under the tradename "Tintofen."

A New Distinction for the Textile Industry



"PERKINS" newly designed, heavy-duty Two-Roll TRICOT SCHREINER CALENDER

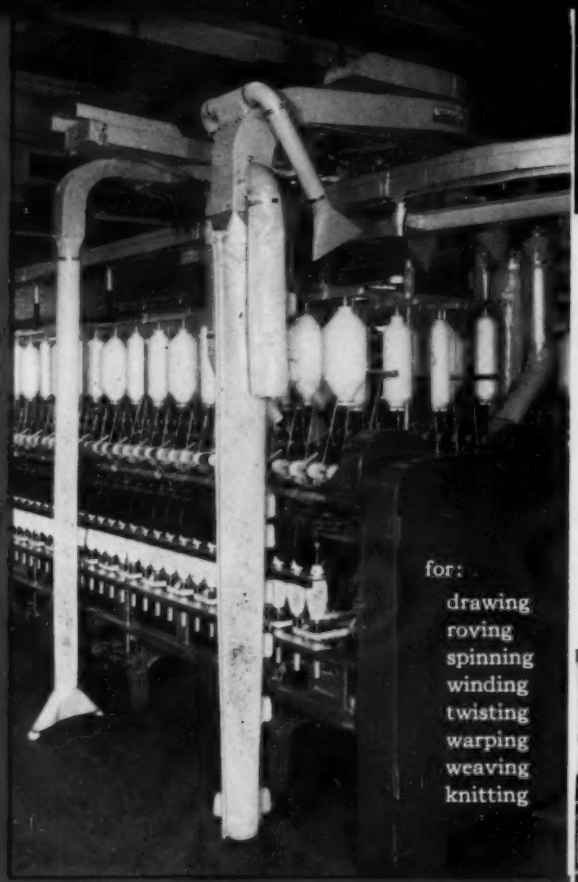


Constructed of heavy fabricated steel frames for rigid support of calender roll bearings, especially built for textile mills demanding a machine for utmost performance in producing the best in finishes on fabrics of exclusive quality.

B. F. PERKINS & SON, INC.

HOLYOKE, MASSACHUSETTS

Parks-Cramer

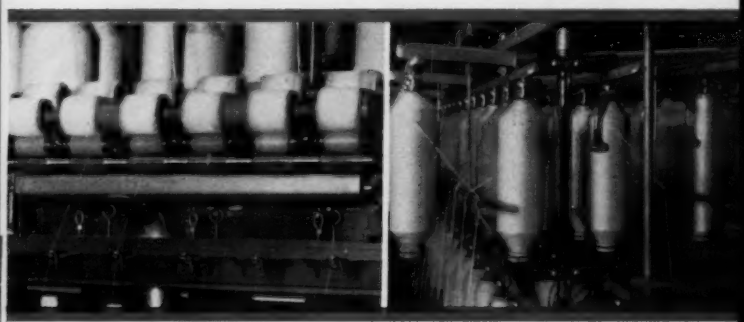


for:
drawing
roving
spinning
winding
twisting
warping
weaving
knitting

Traveling Cleaners

BLOWING UNITS
for machines and room surfaces

COOPERATING VACUUM UNITS
for floors and machines



SpinSaVac
END COLLECTION

SpinSaCreel
ADJUSTABLE

Quality equipment
for new and existing frames

Certified Climate

Atomizer humidification
Automatic Airchangers and Central Station systems
with and without refrigeration

418

Parks-Cramer Company

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WORLD FAMOUS

SCHLUMBERGER COMB

for French-Type Worsted Mills

OUTSTANDING for ready accessibility of all operating parts (including cylindrical comb) and for remarkable cleanliness of product. Settings made quickly.

Also other worsted preparatory machinery

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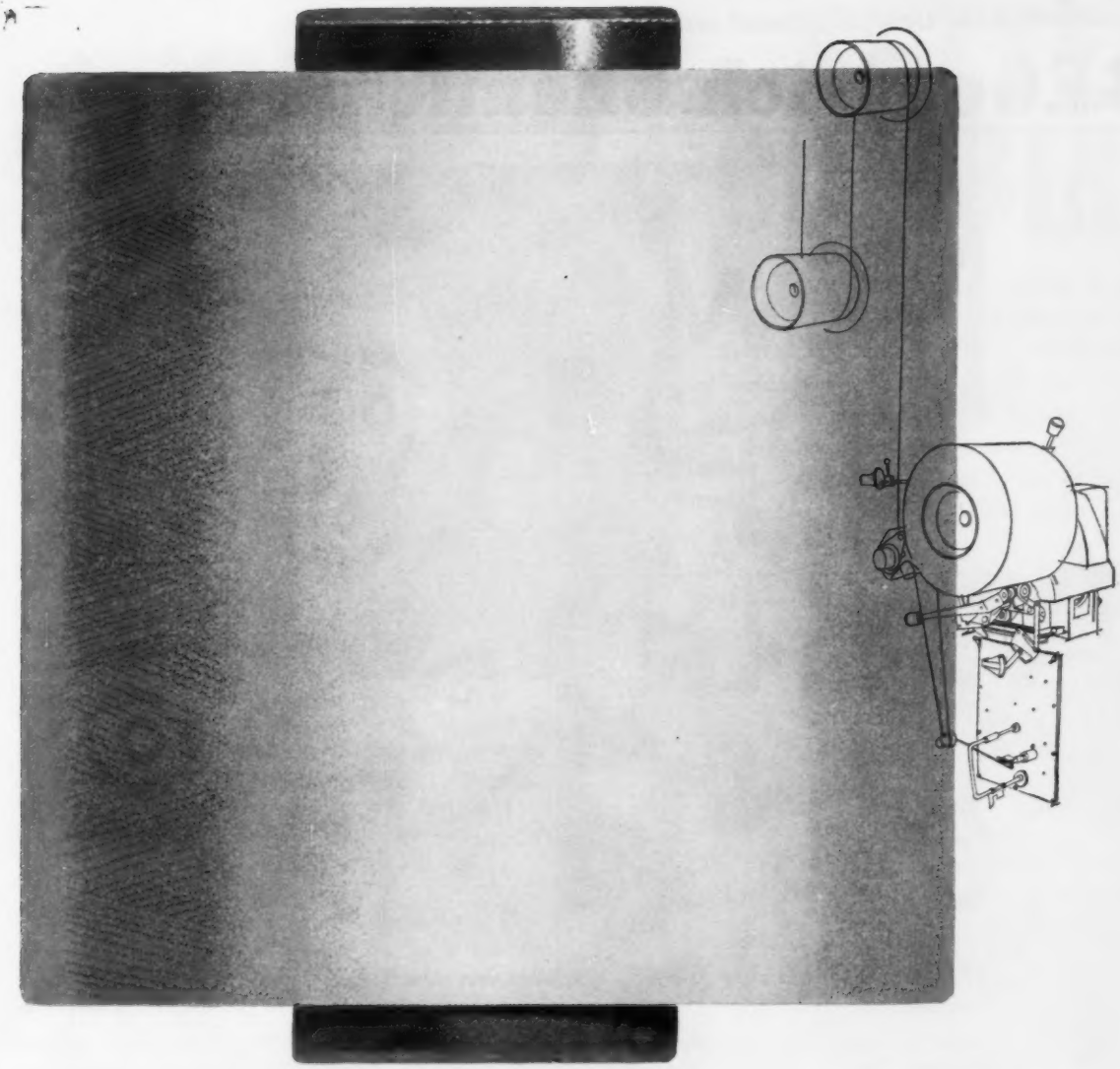
GUEBWILLER, ALSACE, FRANCE

Founded 1808

PUBLI EUROPE



Investigate the **superior quality** of filament yarn produced with the **Leesona 959 Take-up Machine.** Electronic control maintains accurate constant yarn tension from spinning, drawing, extruding or treating...builds optimum density **precision wound** packages . . . the industry standard. Write **Leesona Corporation,** P. O. Box 1605, Providence 1, Rhode Island.

23T.9.3

LEESONA

Another new development using

B.F.Goodrich Chemical *raw materials*

NEW REACTIVE ACRYLIC LATEX

HYCAR 2671 is a new reactive acrylic latex that gives finishes that are durable, dry cleanable, and washfast—at lower processing cost, without the disadvantages you get with resin additives.

Ideal for a wide range of back coatings. Simplification of compounding operations reduces processing costs. You get outstanding washfastness, dry cleanability, hand, and resistance to discoloration.

New promise for adhesives and laminations. This latex overcomes problems of stiffness and discoloration, at the same time producing outstanding bonds with good washability and resistance to solvents. Both wet adhesive and heat sealing methods using it have proved themselves. Already, results have been highly satisfactory in cottons, acetates, rayons, acrylics and other man-made fibers.

Opens new fields for non-wovens. By solving many of the problems that have kept non-wovens from the outerwear field, Hycar 2671 now makes them practical. Compounding is simplified, costs reduced and washing and dry cleaning performance considerably improved.

Hycar 2671 is another product designed to help you produce better textiles for wider appeal, often at lower cost. For more information, write Dept. KA-4, B.F.Goodrich Chemical Company, 3135 Euclid Avenue, Cleveland 15, Ohio. Cable address: Goodchemco. In Canada: Kitchener, Ontario.

B.F.Goodrich Chemical Company
a division of The B.F.Goodrich Company

B.F.Goodrich

GEON vinyls • HYCAR rubber and latex • GOOD-RITE chemicals and plasticizers

the WHITIN way to BETTER COMBING

The Whitin combing process is gaining rapid recognition as a major advance in the manufacturing of combed yarns. Scores of mill customers are reporting the increased production of higher quality sliver. Manufacturing costs are low and its simplicity of construction adds to its efficiency and ease of maintenance.

The Whitin Even-Draft Drawing Frame is unexcelled for drawing either before or after combing. Sliver of uniform quality is produced at speeds of 450† F.P.M. It also features a proven pneumatic waste removal system.

†*Up to 600 F.P.M. carded.*

Laps are formed on the new Super Lap machine. It drafts 48 - 60 ends at up to 800* lbs. per hour, forming a lap ideal for combing.

The Whitin Super J Comber has established an international reputation for fine performance. It is capable of producing up to 60* lbs. per hour. High nep removal ratio, excellent sliver quality and accurate waste control contribute to better yarns than ever being spun from given cotton grades. Its performance is equally outstanding on either super quality or production combing.

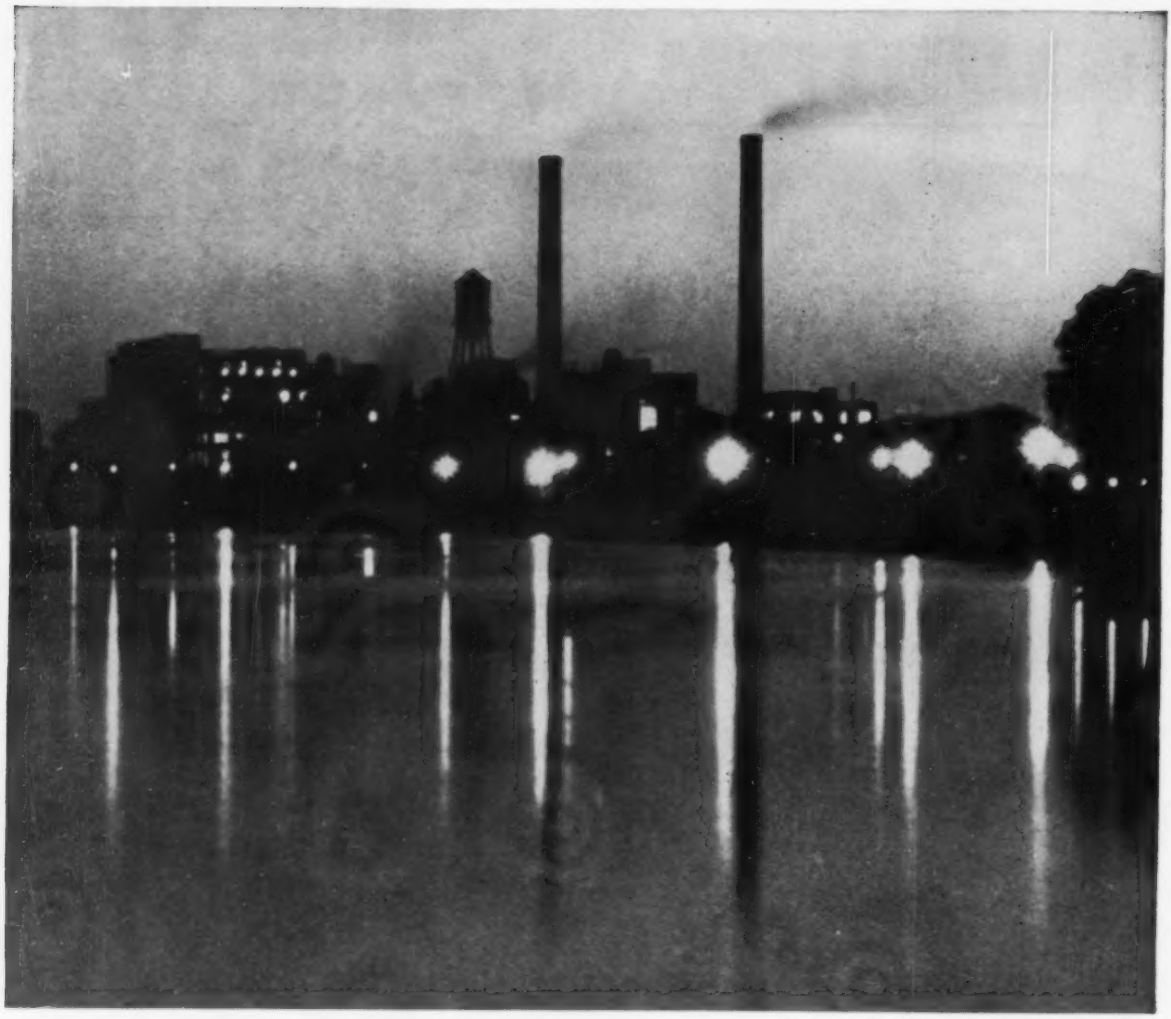
**100% efficiency.*

Sales agents in all principal textile centers

WHITIN MACHINE WORKS

WHITINSVILLE • MASSACHUSETTS, U.S.A.

CHARLOTTE, N. C. • GREENSBORO, N. C. • ATLANTA, GA. • SPARTANBURG, S. C. • DEXTER, ME.



24 HOURS A DAY

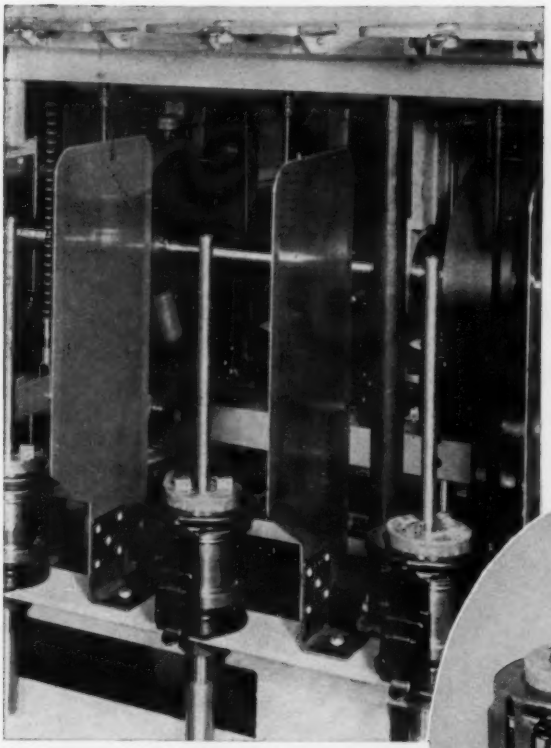
A Better Cloth for you with Clinton Products from corn

Clinton Starches provide better results in sizing warps because of uniform application of size, and increased starch penetration for smooth warps and minimum shedding at the slasher and loom. See your Clinton salesman today.

CLINTON TECHNICAL SERVICE is freely available upon request.

CLINTON

CLINTON CORN PROCESSING COMPANY, CLINTON, IOWA

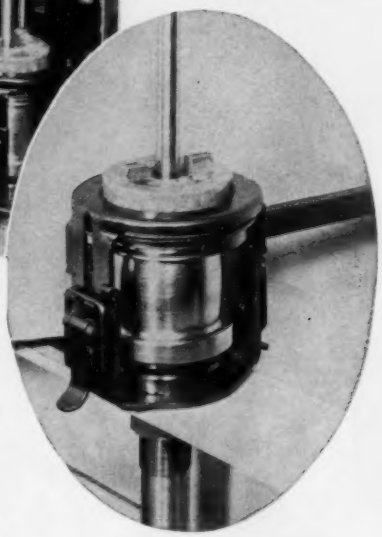


Again demonstrating

MEADOWS
YEARS-AHEAD
ENGINEERING

WE HAVE LICKED ANOTHER MAJOR TWISTER PROBLEM

WE ANNOUNCE: A new, completely automatic stop motion . . . . not electric, not pneumatic — no valves, no switches.



ONE DROP
ONE STOP
ONE SPINDLE

This single end, single spindle, completely automatic stop motion stops bobbin, spindle blade and yarn feed instantly, when single yarn in the creel breaks or runs out.

It leaves the whorl on the stopped spindle operating freely on ball bearings, which means there is no wear on the tape from slippage, and no slow-down on the other spindles driven with the same tape.

Eliminates waste from dropped ply.

One single end down from the creel stops only its own spindle.

Available on

MEADOWS

anti-friction

TWISTERS

with rings up to 9" in diameter and bobbin build up to 12". Meadows Twisters will handle any fibers or filaments that can be twisted on ring frames.

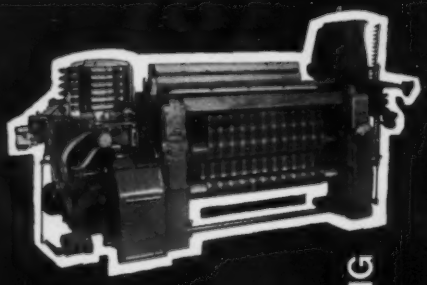
Watch for more Meadows developments at the Greenville show.

Further information or detailed folder on request.

MEADOWS MANUFACTURING CO.

Established 1931 — ATLANTA 10, GEORGIA

Visit us at 1190 Astor Ave., S.W. • Phone us at Plaza 5-1663 • Write us at P. O. Box 10876



SWISS TOP ENGINEERING

6 Shuttle

FULLY
AUTOMATIC
LOOM

ADOLPH SAURER LTD.
ARBON / SWITZERLAND

Picker Overhauling Is Simple When You Depend On . . .

Aldrich Repair Service

We furnish skilled men for reworking pickers, and can deliver to these men any needed parts within 24 hours in most southern states, and within 48 hours to almost any cotton mill in the United States. This makes thorough overhauling a simple matter. Anything needed for a good job can be had at once, while the machine is down for repairs. If you do your own overhauling, this speedy delivery service is just as valuable. You don't have to wait for repair parts — they are there when you want them. We manufacture and install complete blending, opening, and picking systems for cotton and synthetics, and cleaning systems for cotton.

AldricH MachinE WorkS

Greenwood, South Carolina

SOME PERFORMANCES HAVE NEVER BEEN EQUALLED—

STANDARD FOR SKYSCRAPERS—Reaching majestically 102 stories and 1,250 feet into the sky, the Empire State Building is the world's tallest. In addition, a 222-foot television antenna towers above the building. Revolving searchlights installed on the 90th floor can be seen 300 miles away. More than 1,000,000 people visit the observation floor annually.

Look at Pine Oil

Someday someone may build a taller building than the Empire State Building—but it hasn't been done yet. And someday someone may invent a better all-round blending ingredient where high solvent performance is required.

Pine oil, of course, adds much more. Its wetting properties, bactericidal properties, and safety are well-known.

Pine oil, which has been in short supply for many years, is now readily available due to increased productive capacity. Look to Hercules for all the pine oil you need.

Just look at Hercules® pine oil's performance as a high-powered solvent:

	Kauri-Butanol Value
Pine Oil	**500+**
Toluol	105
Naphtha, H.A.	95
Turpentine	55
Naphtha, VM&P	34
Mineral Spirits	32
Kerosene	23

When everything is considered, pine oil still remains an outstanding ingredient for many diversified uses.

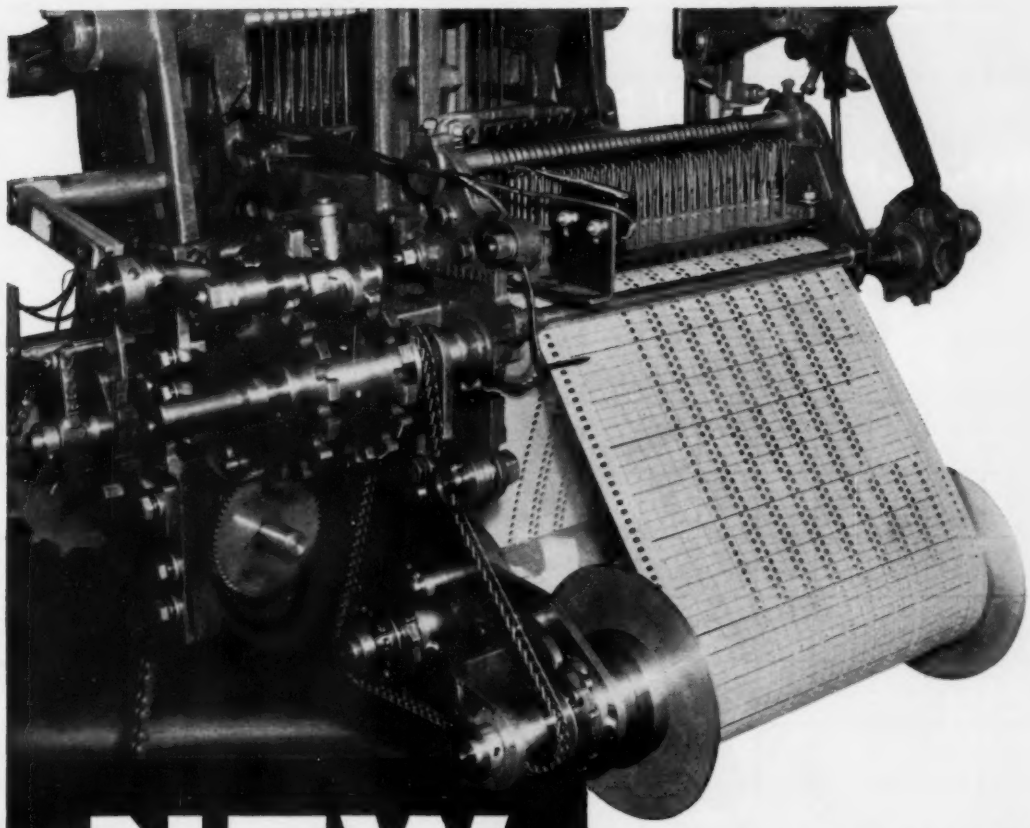
Pine Chemicals Division, Naval Stores Department

HERCULES POWDER COMPANY

INCORPORATED

900 Market Street, Wilmington 99, Delaware

NY60-1



NEW

Reversing Roll Dobby Pattern Indication For Long Patterns

- *Utilizes pattern on strip instead of continuous belt.*
- *Eliminates bulky storage problems.*
- *Eliminates damage in handling and storage.*
- *Saves valuable floor space at loom.*
- *Available for present C & K Dobby Looms.*

The new type of Dobby pattern indication puts both the harness and box pattern on one continuous reversing strip. It is available on new C & K Dobby Looms as well as for existing Dobby Looms.

Harness and box patterns are punched so that a complete weaving cycle is achieved after the pattern has run forward the entire length and then back to the starting point. Operation is completely automatic and can be repeated indefinitely.

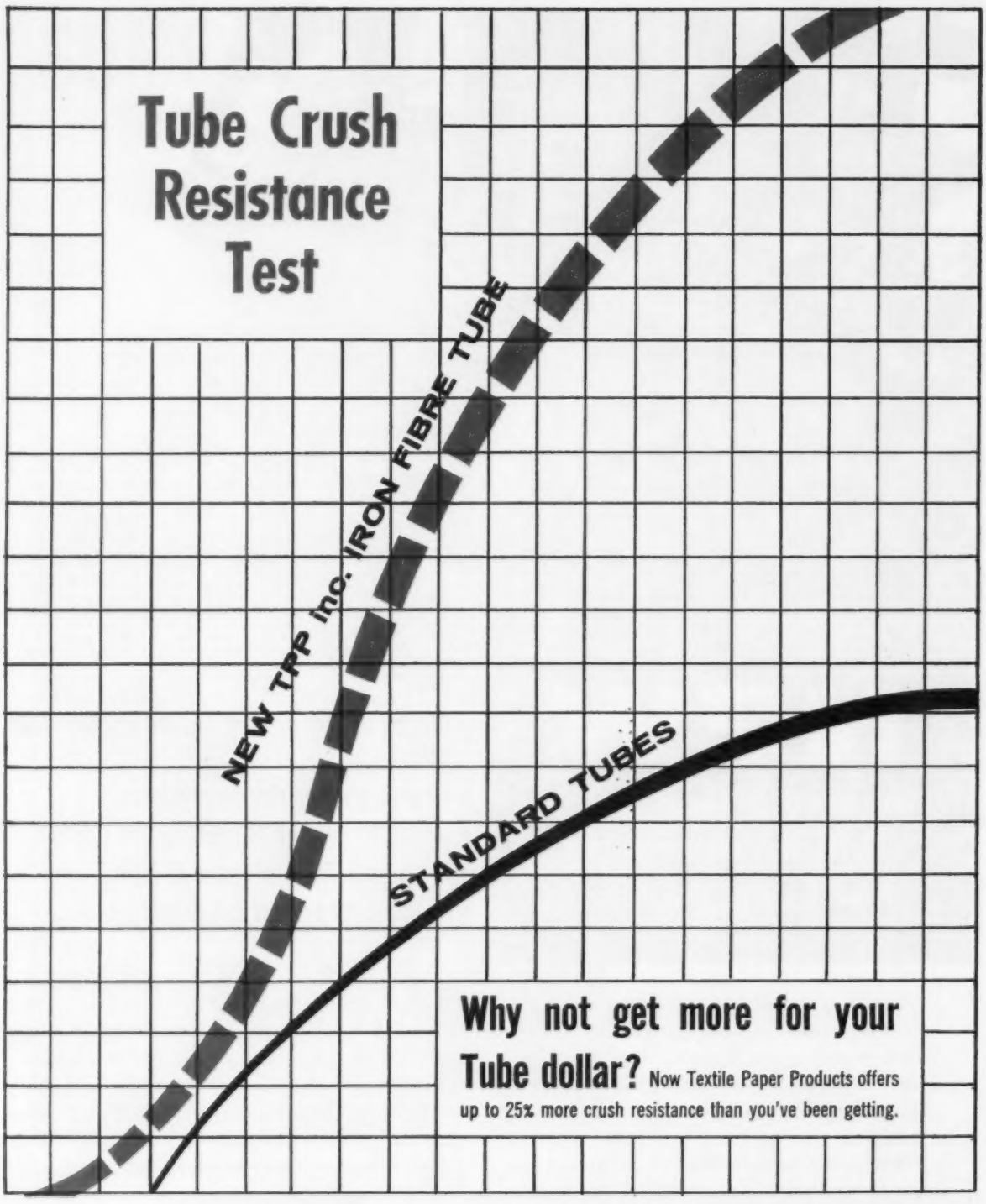
The new Reversing Roll Dobby Indicator reduces the problems of damage to patterns in handling and storage due to bulk. Pattern length compared with chain is cut 76%. 100 picks are contained in 1 foot of pattern length. Both paper or Mylar plastic pattern materials are available.

Call or write us for more information.

MANUFACTURERS OF THE WORLD'S LONGEST LINE OF AUTOMATIC BOX LOOMS

CROMPTON & KNOWLES CORPORATION
C&K
WORCESTER, MASS. U.S.A.

Charlotte, N. C. • Allentown, Pa. • Crompton & Knowles, Jacquard Supply Co., Pawtucket, R. I. • Crompton & Knowles of Canada Limited, Montreal, Que.

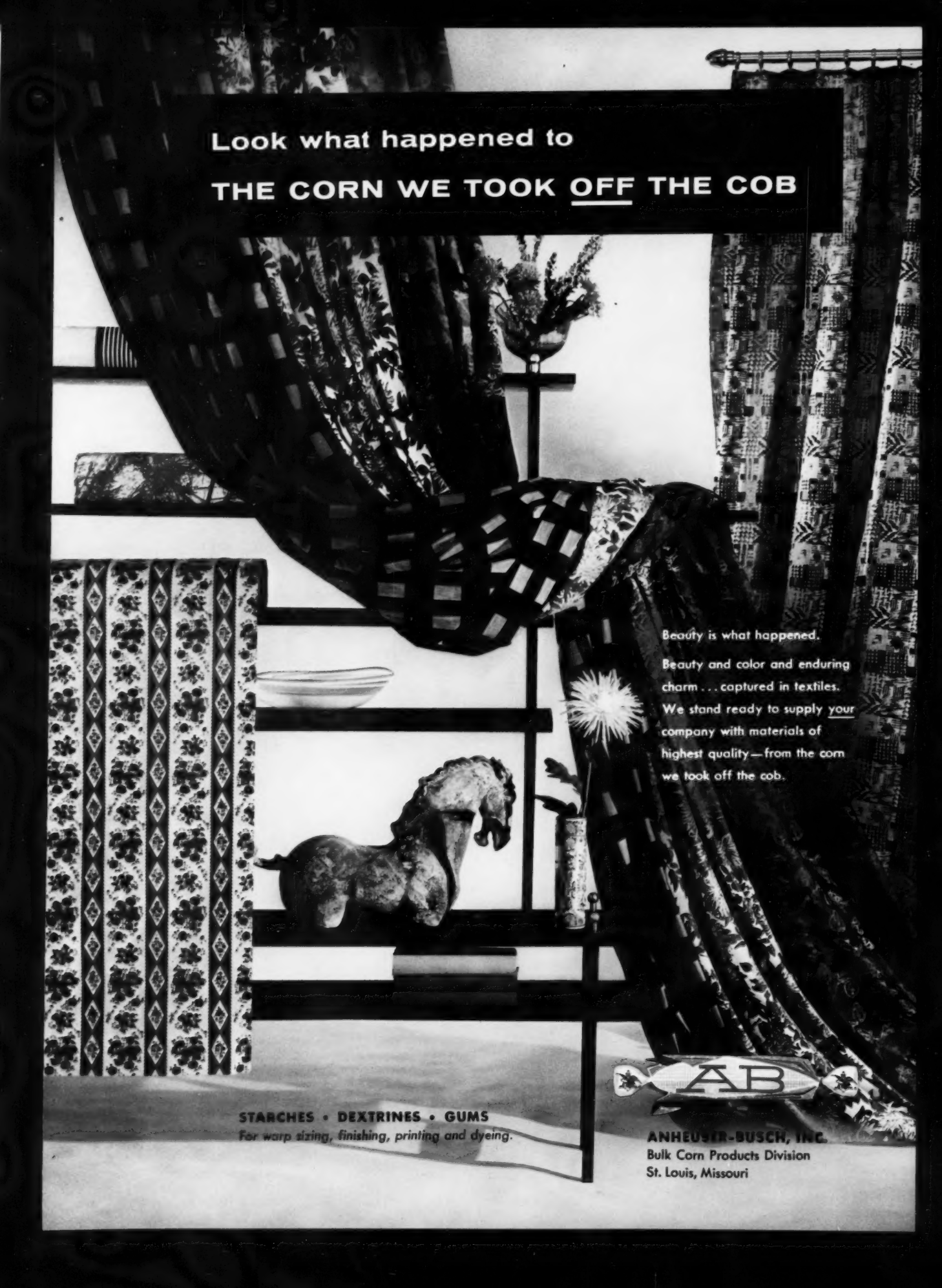

Tube Crush Resistance Test
NEW TPP Inc. IRON FIBRE TUBE
STANDARD TUBES
Why not get more for your Tube dollar? Now Textile Paper Products offers up to 25% more crush resistance than you've been getting.

*Constructed from raw material produced especially for TPPinc by one of the world's largest paperboard manufacturers.

Your source for Textile Mill Tubes, Carpet Cores, Storage Tubes, Yarn Tubes, Loom Tubes. Also supplies for Paper Mills.

TEXTILE PAPER PRODUCTS, INC.

HOME OFFICE: CEDARTOWN GA. • PLANTS: CROSSETT ARK.; BOGALUSA, LA.; JACKSONVILLE, FLA.; CARLYLE, ILL.


Look what happened to
THE CORN WE TOOK OFF THE COB
Beauty is what happened.
Beauty and color and enduring charm . . . captured in textiles. We stand ready to supply your company with materials of highest quality—from the corn we took off the cob.
AB
STARCHES • DEXTRINES • GUMS
For warp sizing, finishing, printing and dyeing.
ANHEUSER-BUSCH, INC.
Bulk Corn Products Division
St. Louis, Missouri

You can't give your cleanup man a better hose for lint and dust control! You see, TEXAIR Hose is designed specifically for millwork by the G.T.M.—Goodyear Technical Man—and his colleagues. It has everything the important job demands: light weight and flexibility—superior resistance to machine oils—a distinctive red cover that won't transfer dirt to user's hands. And TEXAIR Hose lasts longer—still does a perfect job long after ordinary hose would have softened up, cracked or started to slough off. Little wonder it's a familiar sight in so many well-run mills!

GOODYEAR INDUSTRIAL PRODUCTS G.T.M.-Specified

TEXAIR Hose for textile mill use

A Extra-tough cover resists oil, weathering, abrasion

B Vertical braids of high-tensile rayon cord for exceptional strength with great flexibility

C Tube that resists oil, air, water

TEXAIR is available in long, continuous lengths in sizes from 3/16" to 1½" i.d.

Let a G.T.M. uncover a real need for a new product and — presto — it's soon available, carrying the respected Goodyear label.

And that's only one of the reasons the G.T.M. and the Goodyear Distributor rate so high — wherever Conveyor Belts, V-Belts or any other industrial rubber is used. You'll find your best source for any of these under "Rubber Goods" or "Rubber Products" in the Yellow Pages. Or write Goodyear, Industrial Products Division, Akron 16, Ohio.

lots of good things come from

GOODYEAR

Texair—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

THE GREATEST NAME IN RUBBER

THE CHEMSTRAND CORPORATION • GENERAL SALES OFFICES: 350 FIFTH AVENUE, NEW YORK 1, N. Y.
DISTRICT SALES OFFICES: 350 Fifth Ave., New York 1; 3½ Overwood Rd., Akron, Ohio; 197 First Ave., Needham Heights, Mass.; 129 West Trade St., Charlotte, N. C.; California Office: 707

From Chemstrand comes CADON*!

The new multilobal NYLON yarn that lets you do more than ever before!

Knit it, weave it, dye it, print it—for dresses, blouses, lingerie, sleepwear, uniforms, outerwear shells, sweaters, sport shirts, beach and swim wear and all types of linings! The multilobal cross-section of new Cadon nylon yarn opens a wide range of fabric and styling opportunities because:

1 Cadon's appearance is lustrous, richly smooth; makes knits and woven fabrics different.

2 Cadon's covering power is greater than round-section yarns; gives opacity to permit lighter-weight fabrics.

3 Cadon's surface is perfect for printing; takes delicate or strong patterns and holds them sharply.

4 Cadon's wicking properties are excellent; moisture is spread for fast evaporation to insure greater comfort.

5 Cadon's hand is something special! It's springy, almost alive. You can't describe it—you have to feel it!

Most importantly, Cadon has been thoroughly tested under commercial conditions during an extensive (and intensive) development period. To learn how Cadon fits into your line, call your Chemstrand representative. He's got the whole story on this new and exciting yarn.

Cadon nylon by Chemstrand

CHEMSTRAND NYLON

*Trademark of The Chemstrand Corporation for multilobal nylon yarn.. *Chemstrand makes only the yarn; America's finest mills and manufacturers do the rest*

South Hill St., Los Angeles 14. Canadian Agency: Fawcett & Co., 34 High Park Blvd., Toronto, Canada • PLANTS: CHEMSTRAND® NYLON—Pensacola, Fla.; ACRILAN® ACRYLIC FIBER—Decatur, Ala.

Bolster Briefs

by Ron Kinney

Manager, SKF Textile Sales

The recent American Textile Machinery Exhibition at Atlantic City was one of the industry's best–according to Ron Kinney, who has attended almost every textile show in the U. S. during the past twelve years. This month, Ron takes time out to comment on the Exhibition and to report on SKF's participation.

How do you think the Atlantic City Exhibition compared with the many others you've seen? What made the biggest impression on you?

It was easily the best show I've ever attended. The thing that really impressed me was the general enthusiasm, from start to finish. Everyone – top management, foremen, overseers, and suppliers like myself–came expecting to see new products, processes and ideas that would help improve quality and lower costs. And we weren't disappointed.

How did the manufacturers' displays at the Exhibition compare with those at shows in recent years?

I understand there were more than 400 exhibitors on the floor. Nearly all of them had something new to show, whether a product or a process. No one, I'm sure, left the show without taking some valuable new ideas with him.

Many of the displays were unique and well worth seeing, even if you weren't in the market for the the product featured. These exhibits certainly provide some valuable ideas about displaying products.

At other shows, I've heard the comment that manufacturers were simply showing "the same old stuff." This *wasn't* true of the Atlantic City Exhibition. It has been reported that a large number of sales were made on the floor.

What did SKF show at the Exhibition? How were your products received?

Well, let's take those questions in order.

We unveiled our new PK Series Pendulum Weighting Arm Drafting System equipped with new Draftrite Roller Bearing Top Rolls. These products were installed on four SKF Spintesters which were in actual operation, demonstrating high-quality center-suspension drafting of cotton, synthetic, woolen and worsted yarns.

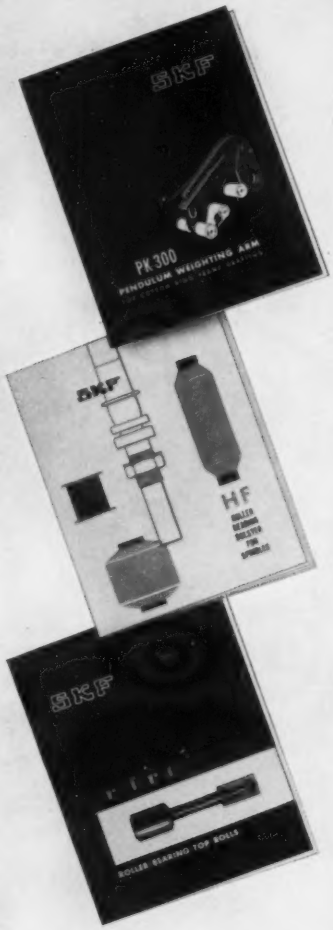
We also demonstrated our new HF High Speed Roller Bearing Bolster, which is designed for cotton spinning, and our HZ Roller Bearing Bolster for heavy-package, high-speed twisting.

There was definitely a great deal of interest shown in these products--- even more than we expected. As a matter of fact, interest was so great that we've arranged to print additional copies of our literature on the PK Series Pendulum Weighting Arm, Draftrite Roller Bearing Top Roll, and the HF Roller Bearing Bolster for spindles. The three booklets are shown in the one-third page SKF ad at right. For a copy of any one of them, or all three, just call or write to me. I'm sure you'll find each of them helpful and of value.

6509

GOT A PROBLEM?
SEND YOUR QUESTION TO
"BOLSTER BRIEFS",
c/o SKF INDUSTRIES, INC.
P. O. Box 6731,
Philadelphia 32, Pennsylvania

You saw them at the show– now see how these new SKF products can save time and money for you!

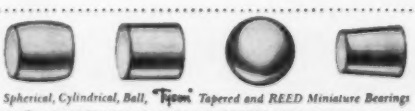


A: NEW SKF PK SERIES PENDULUM WEIGHTING ARM. Ensure better results in spinning cotton, synthetic, woolen and worsted yarns!

B: NEW SKF HF–HZ ROLLER BEARING BOLSTERS. Provide more profitable production of quality yarn–because of their smooth acceleration, vibration-free operation and precision plumbing.

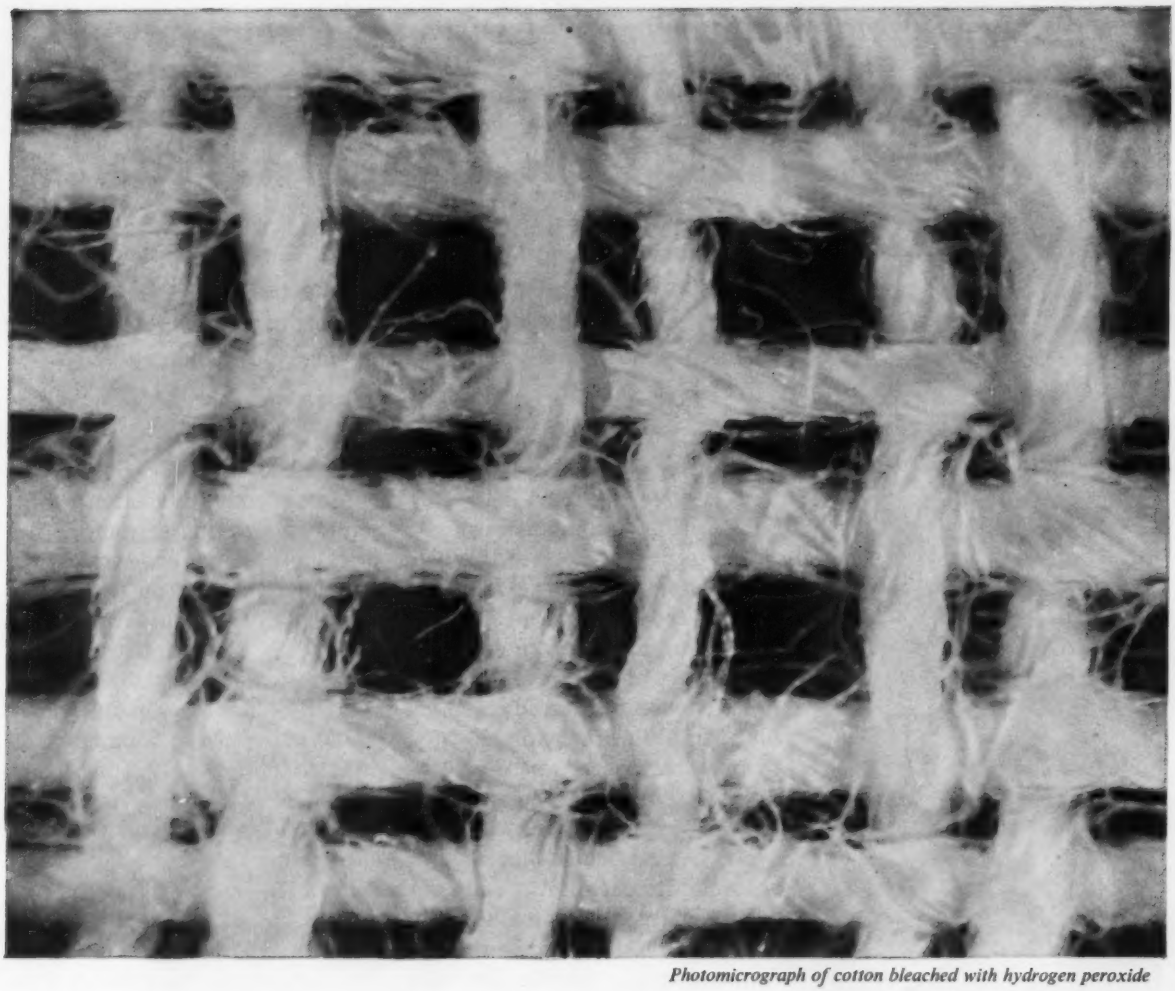
C: DRAFTRITE ROLLER BEARING TOP ROLL. Improve quality and evenness of yarn – reduces maintenance to a minimum.

Call GArfield 6-6400 or write:
SKF Textile Division–Philadelphia, Pa.
in Charlotte, N. C., call JAckson 3-6232



Spherical, Cylindrical, Ball, "Thrust" Tapered and REED Miniature Bearings

EVERY TYPE–EVERY USE
SKF
SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.
REG. U.S. PAT. OFF.



Photomicrograph of cotton bleached with hydrogen peroxide

High-white and handsome!

Textiles with high whites and handsome colors usually have the most eye appeal. Shell Chemical products play an important role in the production of today's attractive and useful fabrics.

Hydrogen peroxide, a rapid, economical bleach, also finds use as a developer for vat dyes. In the production of minimum-care cotton fabrics, Eponite® 100 imparts wrinkle resistance. It also is an ingredient in an antistatic finish for synthetics.

The cotton fibers shown in the picture were mercerized for added luster. Another Shell product, hexylene glycol, was used as a penetrant in this process. Glycerine is a mercerizing assistant and a moisturizer in pigment printing. Shell Chemical alcohols and ketones find use as resin solvents and dye dispersants.

Choose the chemicals for your own process requirements from the column at the right. A Shell Chemical representative will be glad to discuss your specific needs. Write or phone your nearest Shell Chemical office for samples and technical literature.

Acetone
Diacetone Alcohol
Epichlorohydrin
Eponite® 100
Ethyl Alcohol
Glycerine
Hexylene Glycol
Hydrogen Peroxide
Isopropyl Alcohol
Methyl Ethyl Ketone
Methyl Isobutyl Ketone
Sodium Sulfonates

SHELL CHEMICAL COMPANY
INDUSTRIAL CHEMICALS DIVISION

Atlanta • Chicago • Cleveland • Detroit • Houston • Los Angeles • Newark • New York • San Francisco
IN CANADA: Chemical Division, Shell Oil Company of Canada, Limited, Montreal • Toronto • Vancouver

SHELL

New Fundamental Chemical Discovery Creates A

BETTER SIZE FOR SYNTHETICS

New noncongealing Mira-Film Acetate Gum—developed especially for synthetics—gives noticeably superior adhesion. Forms clear, tough, flexible film that reduces warp stops, shedding, fuzz balls. As much as 2% better weaving efficiency demonstrated in actual mill tests!

Now, after over two years of intensive research, the A. E. Staley Mfg. Co. announces a new concept in the sizing of acetate, viscose, and other man-made fibers—through the use of Mira-Film Acetate Gum. Made by an exclusive process, so unique that a basic process patent has been applied for, Mira-Film is available in a *complete* range of viscosities.*

Mira-Film is particularly outstanding in applications with spun synthetics and their blends. For example, its chemical affinity for acetate yarns results in noticeably superior adhesion. And Mira-Film forms a tough, flexible film with increased abrasion resistance. Mill tests on a 90/10 Viscose/Acetate blend produced a 1% to 2% improvement in weaving efficiency.

More effective protection greatly improves weaving efficiency. Reduces breakage, shedding, fuzz balls and matting on drop wires . . . virtually eliminates thin spots. Cuts costly down-time.

Staley's exclusive development sets a new high, too, in uniformity . . . permits a degree of process control heretofore unattainable. Thus, Mira-Film Gum has minimum variation in viscosity or other physical properties, from bag to bag or from carload to carload.

Why not get all the facts about new Mira-Film Gum? For further information, see your Staley Textile Representative at the branch office nearest you or write today to: A. E. Staley Mfg. Co., Decatur, Ill.

*Mira-Film is one of a series of new products with a broad spectrum of characteristics, made possible by this new Staley development.

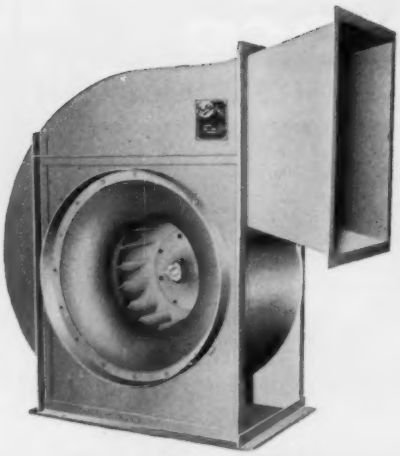
Compare The New Mira-Film Gum With Your Present Starch Size!

1. Completely noncongealing
2. Lower pasting temperature
3. Can be used at lower size box temperatures (120° F)
4. Paste is long and stringy
5. Faster cooking—only 30 minutes required at normal concentration
6. Requires wax additive only
7. Can be made in a full range of viscosities

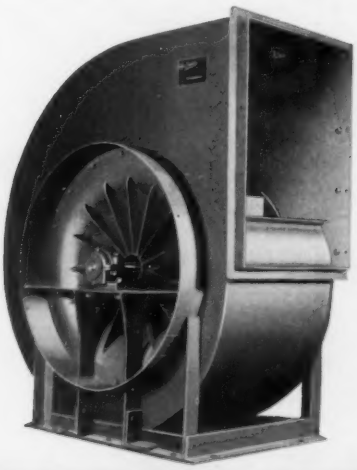
A. E. STALEY MFG. CO., DECATUR, ILL.

Branch Offices: Atlanta • Boston • Chicago • Cleveland • Kansas City
New York • Philadelphia • San Francisco • St. Louis

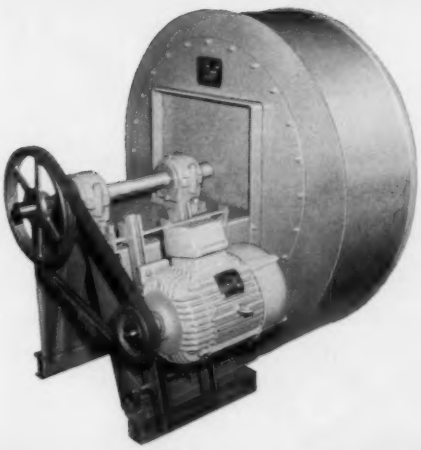
Realize the Lower Cost of Quality Fans



"Buffalo" Type "CR" Fan



"Buffalo" Type "BL" Fan



"Buffalo" Industrial Exhauster

Without a doubt — the dependable performance of quality built fans pays off in longer, more effective, trouble-free service. At Buffalo, we call this the "Q" factor . . . the highest quality you can get. Here are 3 examples of what this can mean to you . . .

For supplying moderate pressure ventilating, air conditioning and air cleaning systems, the "Buffalo" Type "BL" Fan is ideal. From inlet through wheel to housing, the "BL" is engineered for quiet, efficient, economical operation. The "Buffalo" designed non-overloading characteristic assures stable output from free delivery to shutoff. Buffalo's traditional durable construction assures long, maintenance-free life. Capacities to 500,000 cfm. Write for Bulletin F-104.

For severe industrial service the "Buffalo" Type "CR" Fan is unsurpassed. Fan efficiency is increased by the same design factors that reduce wear to a minimum. A unique radial blade plus maximum streamlining through the entire fan accomplishes this dual purpose. Long, productive fan life is assured by Buffalo's extra-heavy duty construction throughout. For full details, write for Bulletin FD-205.

For rugged air and material moving jobs you can rely on "Buffalo" Industrial Exhausters. Special units will move hot gases from 200° F. to 850° F. For handling corrosive fumes, actual users prove that "Buffalo" Rubber-Lined Exhausters will outlast standard metal fans as much as twelve to one. Efficient material wheels are available for moving emery dust, saw dust, chips, long shavings and many other materials. There's a "Buffalo" Industrial Exhauster to fit your "tough" application. Write for Bulletin FI-110.

For full information on these and every type "Buffalo" Fan, call in your nearest "Buffalo" Representative. Or write us direct, outlining your air moving problems.

"Buffalo"

BUFFALO FORGE COMPANY
Buffalo, N. Y.

Buffalo Pumps Division Buffalo, N. Y.
Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

VENTILATING • AIR CLEANING • AIR TEMPERING • INDUCED DRAFT • EXHAUSTING • FORCED DRAFT • COOLING • HEATING • PRESSURE BLOWING

Inspection check point; 3° 30′ cone production.

The challenge of synthetic yarns – met by Sonoco!

The advent of filament yarns presented a unique challenge to the industry. Packaging and production problems *had* to be solved before the yarn could be processed. However, as always, Sonoco was ready with dependable, economical paper carriers. Sonoco *anticipated* the industry need and developed a completely new cone especially for man-made yarn—the now-famous 3°30′ cone.

Sonoco 3°30′ cones are available with smooth, Velvet or Unitex Surfaces. They are made in gray and many other solid colors. Colored lacquer tips, lacquer rings or lacquer dots, and other special finishing, can be specified by the customer.

Sonoco 3°30′ cones are typical of the dependable products manufactured by a fully integrated company with 60 years' experience in creating and producing all types of paper textile carriers. *Only Sonoco,* in its field, provides the necessary knowledge, skill and capacities to meet the ever-changing techniques of the textile industry. *Let Sonoco experience help you!*

SONOCO
Products for Textiles

SONOCO PRODUCTS COMPANY, HARTSVILLE, SOUTH CAROLINA • Mystic, Conn. • Akron, Ind. • Lowell, Mass. • Holyoke, Mass • Phillipsburg, N. J. • Longview, Texas • Philadelphia, Pa. • La Puente, Calif. • Fremont, Calif. • Atlanta, Ga. • Brantford, Ontario • Granby, Quebec • Mexico City

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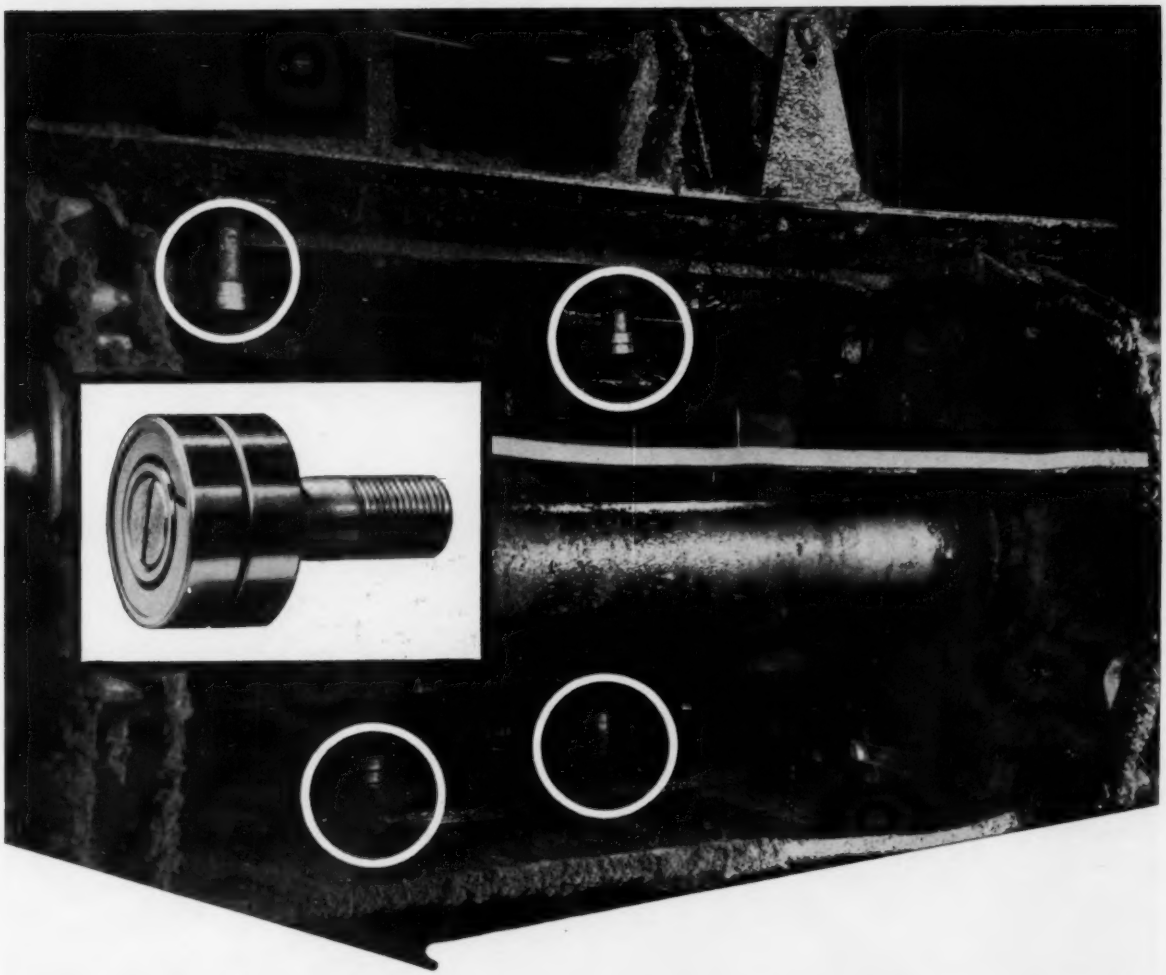

When thrust loads overpowered original bearings... Dixie Bearings had the answer!

The original bearings on this automatic machine failed after a short time because they weren't designed to take the thrust loads to which they were subjected. Dixie Bearings engineers designed and had built a special stud on which were mounted two permanently lubricated and sealed ball bearings.

To keep the cost of this design to a minimum "Locktite", a permanent bonding agent, was used to hold the bearings to the stud. This eliminated shoulders, locknuts or rings yet the bond is as strong as the best press fit.

This installation has now been in operation for many months with no failures reported.

This is not an isolated example of our services — surveys of bearing requirements, inventory control, application engineering, maintenance schedules and procedures are a regular and continuing part of our service to all customers to whom we supply replacement bearings.

Tell us how we can help YOU!

Providing bearing service in the South

DIXIE BEARINGS, INC.

ARKANSAS: Little Rock • **FLORIDA:** Jacksonville • **GEORGIA:** Atlanta • **KENTUCKY:** Louisville • **LOUISIANA:** Baton Rouge New Orleans • **N. CAROLINA:** Charlotte • Greensboro • **S. CAROLINA:** Greenville • **TENNESSEE:** Chattanooga • Kingsport • Knoxville Memphis • Nashville • **VIRGINIA:** Norfolk • Richmond • Roanoke

Foxboro Humidity Control Systems

There's no guesswork about humidity in this large southern textile mill. A Foxboro Humidity Control System holds it within ±1% of set point, 24 hours a day. And the system provides chart records to prove it!

The Foxboro instrument used in the Roving Room pictured above is a Proportional Temperature and Relative Humidity Recorder-Controller. It's just one of a complete line of pneumatic and electric humidity controllers that includes direct-reading dew point instruments, wet and dry bulb instruments, and direct-reading relative humidity recorders and controllers.

There is a Foxboro humidity instrument that will help improve production and product quality in your mill, too. Write for complete details. **The Foxboro Company, 487 Neponset Ave., Foxboro, Mass.**

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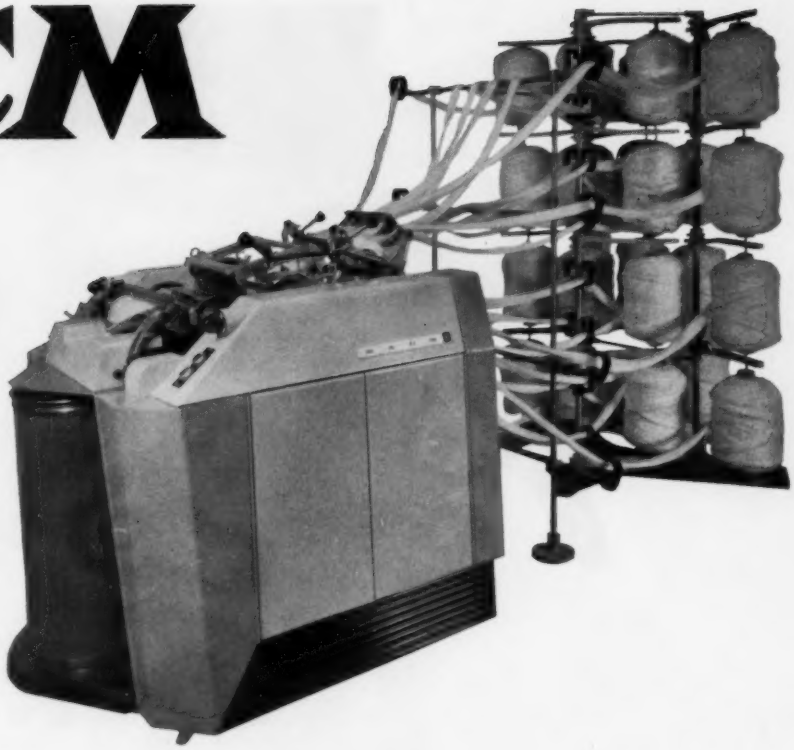
HUMIDITY INSTRUMENTS

Wet & Dry Bulb • Direct Reading Dew Point •
Direct Reading Relative Humidity

SACM



WORSTED

Latest Model PERL COMB for Worsteds & Synthetics . . . Makes low cost French Combing possible. Runs at 175 nips per min. New ball creel preloads for 3 shifts. No one makes a French Comb like the French, and you will find no substitute for the inventor's experience . . . SACM. In the U.S.A. and Canada, Sales and Service of Continental Worsted Machinery provided by ATKINSON, HASERICK & CO., INC., FRAMINGHAM, MASS.

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New 2 Head High-Speed DRAFTER (ER) gives higher efficiency, remarkable accuracy and improved accessibility. Reduced deliveries allows larger cans with fewer piecings. New simplified settings. High-speed, no-lap drafting. New creel prevents false drafts. In the U.S.A. Sales and Service are provided by MEDLEY MFG. CO., 400 32ND ST., COLUMBUS, GA.

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imparts soft hand with little reduction in moisture absorbency

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UVERSOFT "D" is an outstanding anti-static agent. It should be considered for situations where the accompanying softening action is not objectionable.

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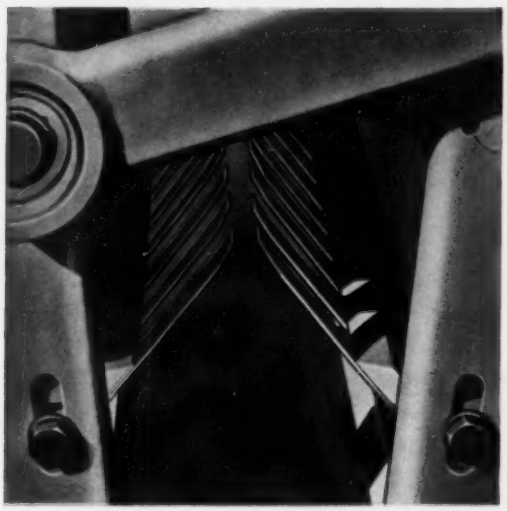
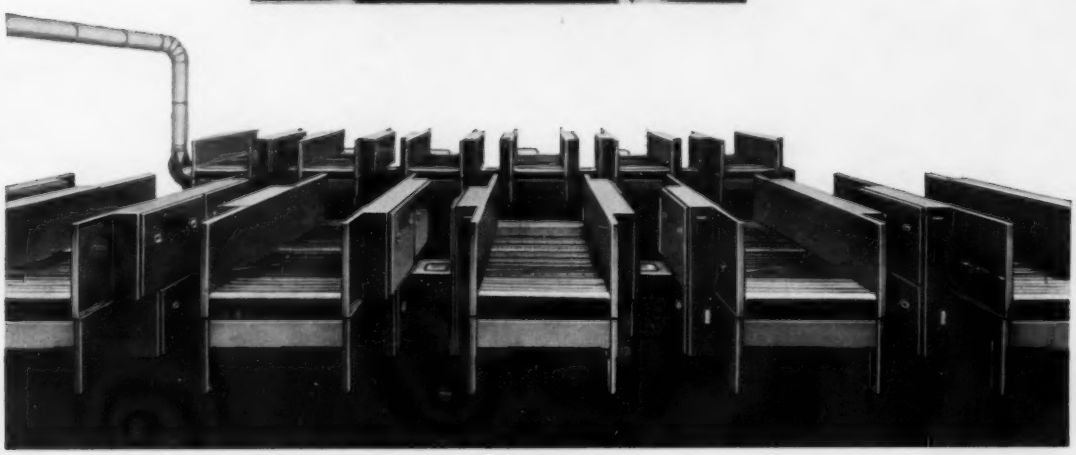
TRÜTZSCHLER

AUTOMATIC BALE PLUCKING AND BLENDING INSTALLATION





The Bale Opening and Blending Installation for cotton and man-made fibres operates automatically with the highest degree of precision. The auto-plucker plucks the compressed material from the bale and opens it into the smallest tufts without fibre breakage or nepping.

The advantages are: Fully automatic blending, uniform quality, better opening and cleaning.

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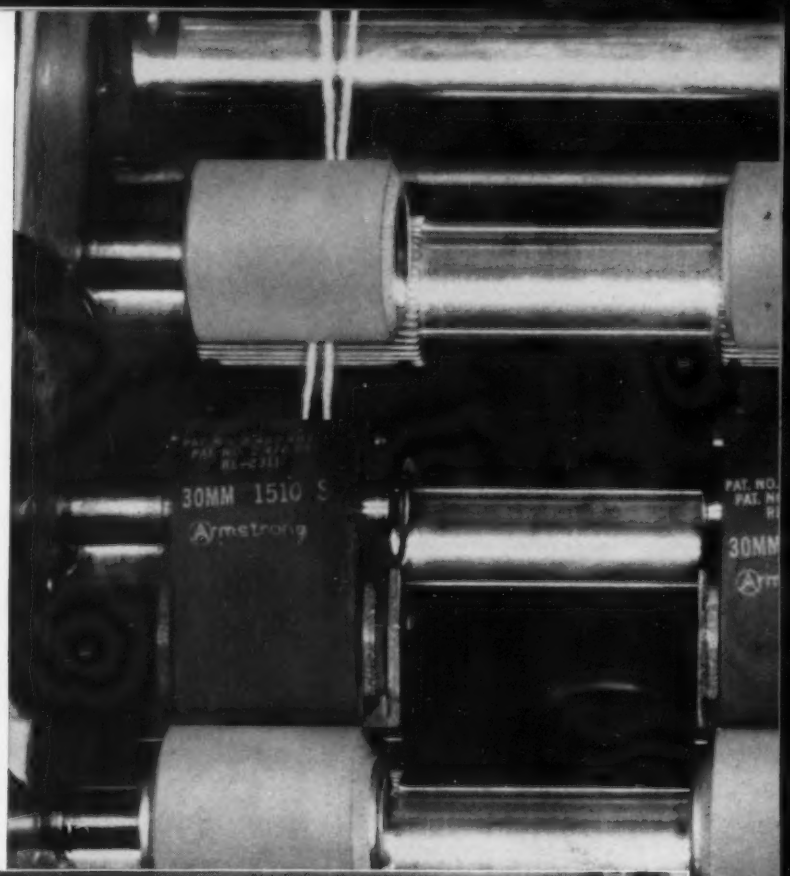
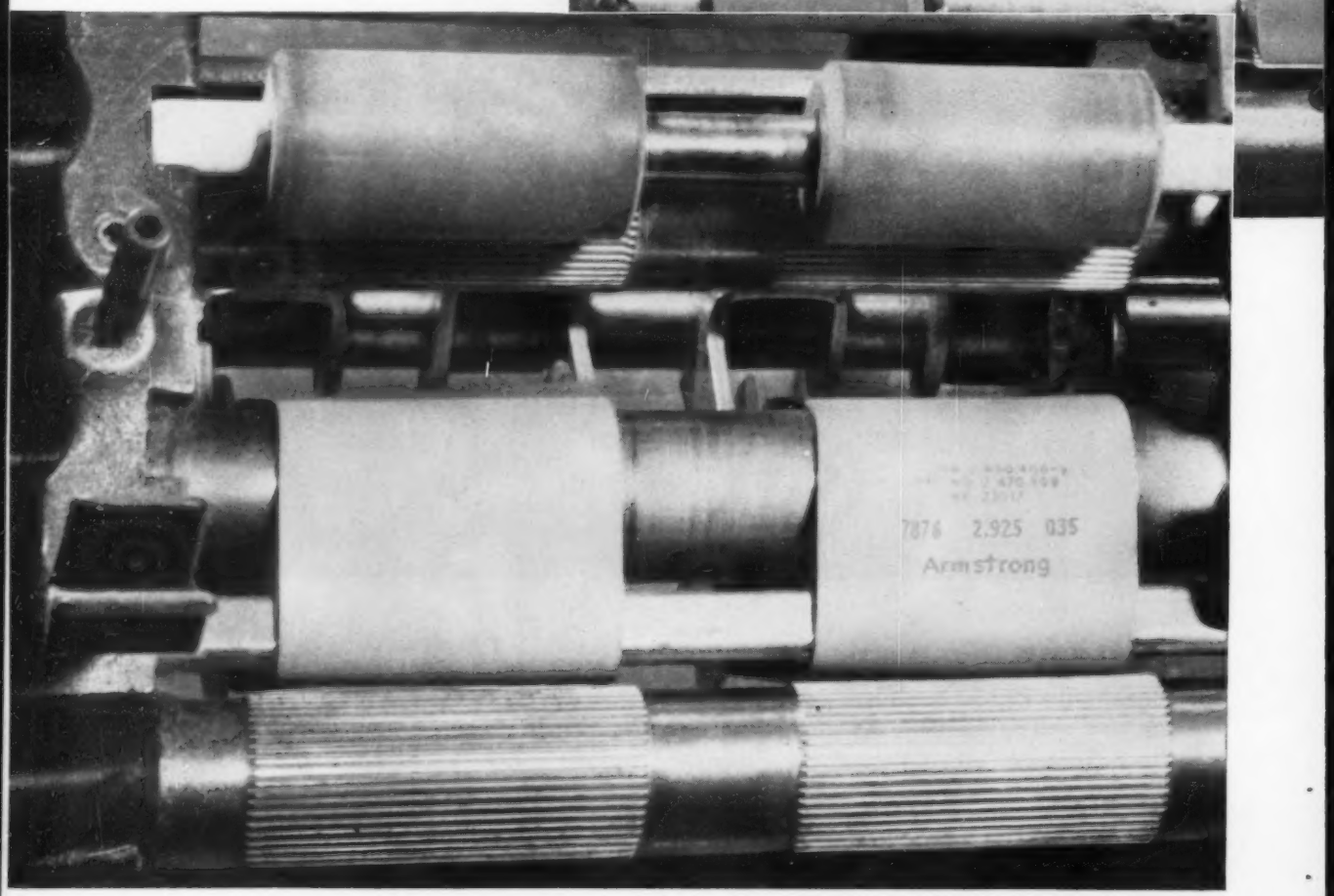
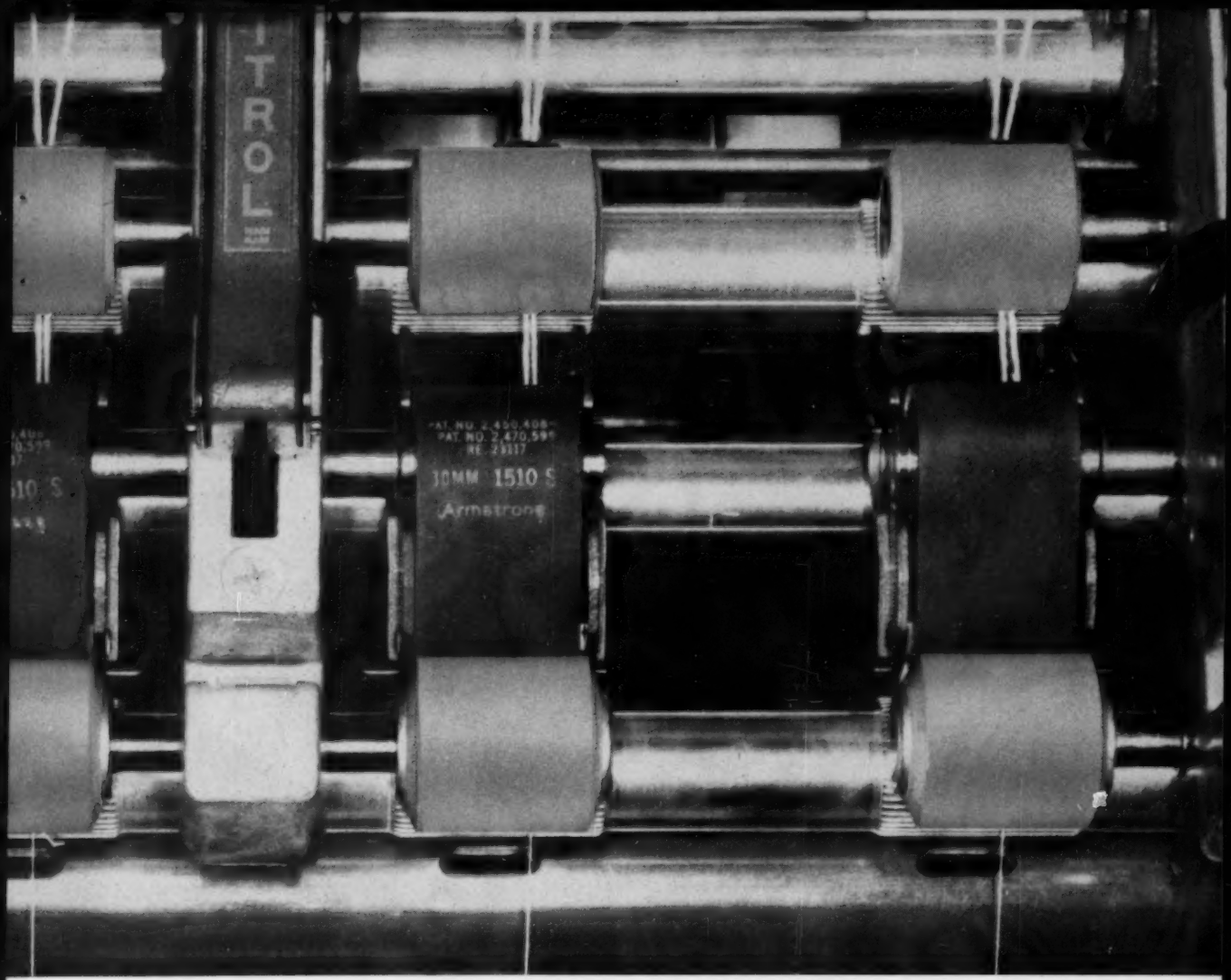
For close-pin double-apron systems, use Accotex NO-7075. This black-and-white apron pioneered the two-compound principle in aprons. Special synthetic rubber compounds give it smooth drafting properties and good resistance to abrasion.



For long-apron systems, Armstrong Accotex NO-7876 is recommended. Two special rubber compounds give it super-flexibility, superior fiber-handling characteristics, and unusual resistance to flex cracking and ozone. ▼





On any drafting system, Accotex Aprons help you turn out quality yarn

The many high draft systems and change-overs available today differ in important details . . . but they all require precision-made spinning aprons for best performance. That's why most mills specify Accotex Aprons when they place orders for new or modernized equipment.

These aprons turn out strong, uniform yarn because they are designed to the requirements of the frame on which they're to run. For example, specially compounded synthetic rubbers have just the right frictional characteristics to give you smooth drafting action and excellent yarn control.

These special rubbers also have high resistance to tearing, abrasion, ozone, and yarn-treating chemicals. As a result, they give you years of service on any high draft spinning system.

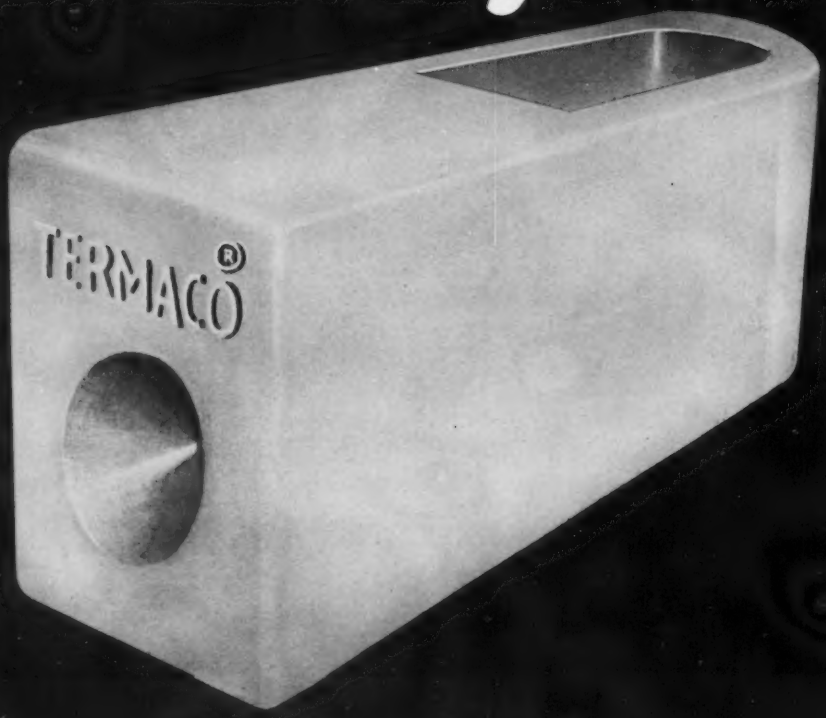
The construction of Accotex Aprons also contributes to their outstanding performance. A strong, straight-line cord interliner . . . a construction developed and patented by Armstrong . . . maintains dimensional stability.

Your Armstrong man will be glad to give you more information on Accotex Aprons. See him or write to Armstrong Cork Company, Industrial Division, 6407 Ivy Street, Lancaster, Penna.

Armstrong ACCOTEX APRONS

1860–1960 Beginning our second century of progress

but you can't buy better



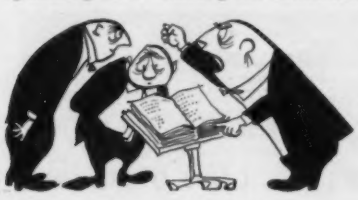
NEWS IN BRIEF

Unfilled Orders High at Cone. Unfilled orders at Cone Mills Corp. are the largest in several years, and 25 per cent ahead of last spring, Ceasar Cone, president, told stockholders at the firm's recent annual meeting.

If You Can't Lick 'em . . . Robert T. Stevens, president of J. P. Stevens & Co., Inc., said recently that the American cotton industry would be helped if "our government would make it clear that it does not want American industry to go overseas to exploit foreign labor in order to supply

the foreign market . . . I cannot conceive . . . that we would move plants overseas, export jobs, and import unemployment . . . I know of businessmen who are moving overseas—apparently they think it is a part of our foreign policy."

New Name for Hosiery "Seconds." A study of the terms used to designate below-first-quality hosiery will be made by the National Association of Hosiery Manufacturers. NAHM officials, speaking at a hearing on amended



The image of Soviet Premier Nikita Khrushchev appears in the background as Arthur Gilmore narrates in a scene from "A Letter to Moscow." The 28-minute color film, illustrating the advantages of the American concept of free enterprise, is sponsored by Armstrong Cork Co. as a part of its centennial observance. Prints of the film will be loaned without charge.

trade practice rules for the hosiery industry, expressed concern over the use of terms other than the accepted "irregulars," "seconds," and "thirds." The Association was said to be particularly uphappy about the use of the expression, "substandard," and the abbreviations, "irr." and "sub.," calling these terms "meaningless."

NRMA Doesn't Like Labeling Act. The Textile Fiber Products Identification Act imposes a tremendous burden on the retailer while failing to accomplish its purpose, according to James J. Bliss, assistant to the executive vice-president and counsel, National Retail Merchants Association. He called on retailers to strive for revision of the Act and the rules and regulations covering its application. "The truth of the matter is that the principal accomplishment of the textile act thus far has been to aggrandize the sale of natural textile and synthetic fibers having valuable trademarks," he said.

Discriminate Against U. S. Textiles. A charge that foreign nations are discriminating against American textile products has been filed with the Senate Commerce Committee. The American

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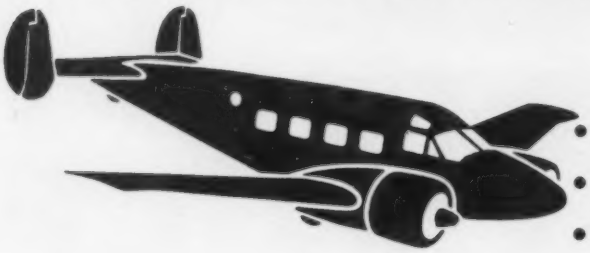

- 1956 TWIN BEECHCRAFT SUPER 18
- TWO TWIN BONANZAS
- D-18 TWIN BEECH
- 1959 TRAVEL AIR
- TWO 1958 TRAVEL AIRS
- TWO BONANZAS
- TWO CORPORATION OWNED EXECUTIVE LOCKHEED LODESTARS
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Beechcraft AIRFLEET OF THE TEXTILE INDUSTRY

Cotton Manufacturers Institute said conditions responsible for the contraction in textile exports have worsened in the past 18 months, citing new bars erected against American goods by a number of countries. Last year cotton textile exports fell to a post-war low of 472.6 million square yards, as against 500.5 million square yards in 1958.

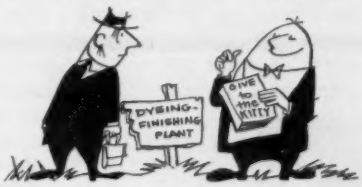
New Degree at Ga. Tech. Beginning with the fall quarter this year, the A. French Textile School of the Georgia Institute of Technology will offer a new degree,

Bachelor of Science in Textile Chemistry. Until now, students majoring in Manufacturing, Management, and Textile Chemistry and Dyeing all received a Bachelor of Science in Textiles degree.

Japanese Exports to Canada Soar. Value of Japanese exports to Canada of clothing, textile products, and fabrics during 1959 showed an increase of 56% from 1958 totals (from $26.6 million to $41.5 million), in many cases outstripping domestic production, according to the Canadian Apparel and Textile Manufacturers Association. In contrast, the United States with a market about 15 times as large as Canada's, took only 6 times as much Japanese textiles in 1959.

Hoover TRI Fellow. Former President Herbert Hoover was named an Honorary Fellow of the Textile Research Institute at the group's recent annual meeting. The award was conferred on Mr. Hoover in recognition of his part in conceiving and establishing the Textile Foundation, TRI's predecessor. In addition, a Herbert Hoover Fellowship has been established for award to graduate students with exceptional records.

Pa. Dyers-Finishers Liable for Sales Tax. Pennsylvania's Sales Tax Review Board has ruled that dyeing and finishing plants are



engaged in processing, rather than manufacturing, and hence are liable for the sales tax. The Board ruled that only the dyestuffs used are exempt from tax. The ruling is being appealed to the state's Sales Tax Appeal Board.

Textile Man Raps "Buy Foreign" Economist. Speaking at a recent meeting of the American Association of Industrial Editors, William C. Freund, economist for

Prudential Insurance Co., told the group, "To the extent that we purchase goods from abroad at lower prices, we are able to concentrate our own resources on those goods which we can produce most efficiently." Answering Dr. Freund, James P. Sloan, director of industrial relations for Joanna (S. C.) Cotton Mills Co. and newly elected president of AAIE, said that the pursuit of such a policy, as far as textiles are concerned, would make South Carolina "one of the underdeveloped areas of the world."

Chemical Patents Available. More than 63,000 chemical patents issued by the U. S. Patent Office from 1953 through March 1 of this year are now covered by Uniterm

Labor-Management News

Reject Unions. Employees of Powell Knitting Mills, Spartanburg, S. C., voted 63-22 to oust the American Federation of Hosiery Workers as their bargaining agent. * * * Employees of Joanna Western Mills Co., Chicago, Ill., voted

488-171 against representation by Textile Workers Union of America. This was the third time in less than three years that Joanna's workers had rejected union affiliation.

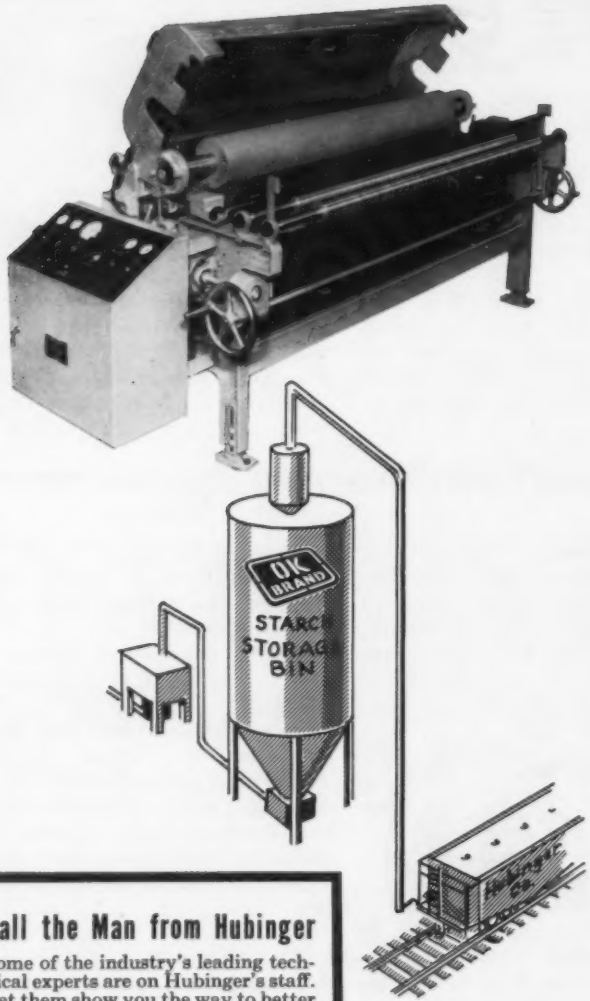
Union Backs Off at Linen Thread. Charges of minor violations of the National Labor Relations Act brought by Textile Workers Union of America caused the National Labor Relations Board to call off an election scheduled at the Blue Mountain, Ala., plant of Linen Thread Co. According to R. C. Moyer, plant manager, the company wanted to go ahead, but the union in effect called off the election because of fear that it would be defeated.

Raise at Celanese. The 2,500 members of Textile Workers Union of America at the Cumberland, Md., plant of Celanese Corp. of America have received an across-the-board increase of 8 cents per hour in a wage reopening.

First Contracts. A first contract providing 30 cents in wage increases and fringe benefits for the 50 employees of Gold Mills, Inc., Pine Grove, Pa., has been signed by the company and Textile Workers Union of America. * * * An 11-cent package, calling for 9 cents to 14 cents in wage hikes and other benefits, has been ratified for the 750-employee plant of Stearns & Foster Co., Lockland, O. TWUA recently ousted a company union at the plant.

What you should know about STARCH*

YOU PROBABLY KNOW—BUT OTHERS MAY NOT



Q. At what relative humidity are starch films the most effective?

A. Starch films are most effective at relative humidities between 70% and 80%. In this range, they retain maximum toughness and elasticity.

Q. What is the ideal moisture content of a cotton warp as it comes off the slasher?

A. Cotton warps weave better with a moisture content of 6.5% to 8.5%.

Q. What are the difficulties experienced when a warp is over-dried?

A. The strength will be greatly reduced and will be hard to tie. It becomes brittle and sheds easily, losing its elasticity, which no amount of moisture can return to it. It is also hard to desize.

Q. What are the problems encountered when too much moisture is left in the warp.

A. The size film will become soft and sticky and will not provide proper protection for the yarn on the loom. Fuzz-balls and matting may also be encountered. Its susceptibility to mildewing is increased.

Q. WHAT ARE THE BEST STARCHES AVAILABLE FOR SIZING COTTON AND SPUN SYNTHETIC WARPS?

A. OK BRAND STARCHES, of course, manufactured by THE HUBINGER COMPANY.

Call the Man from Hubinger

Some of the industry's leading technical experts are on Hubinger's staff. Let them show you the way to better products—and plant savings, too. The Hubinger representative will be pleased to place these experts at your service.

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Indexes published by Information for Industry, Inc., 1000 Connecticut Ave., N.W., Washington 6, D. C. Fields covered by the indexes include many of interest to textile chemists; for example, soap, detergents, synthetic fibers, and glass fibers.

World Cotton Spinning Wages. These are the comparative wages and fringe benefits in the cotton spinning industries of various countries, according to the Japan-U. S. Textile Information Service, using the Japanese wage as 100:

United States	360
United Kingdom	199
West Germany	145
France	110
Japan	100
Austria	70
Mexico	67
Italy	59
India	31

Zantrel Production to Start. Hartford Fibres Co. will begin production of Zantrel "polynosic" fiber at Rocky Hill, Conn., early in September. The fiber will be produced in 1-, 1½-, and 3-denier staple, and initial capacity will be in excess of 10 million pounds. At present, market-development quantities of the fiber are being imported from France.

Du Pont Success Formula. These are the ten points in the pattern that has guided the Du Pont Co. since its founding, according to

James Q. du Pont, great-great-grandson of the founder, speaking at the recent annual convention of Phi Psi textile fraternity: 1. Fill a need, 2. Have the job know-how, 3. Meet competition, 4. Always improve through research, 5. Don't waste anything, 6. Be in a position to get more capital when needed, 7. Plow back earnings heavily, 8. Diversify and departmentalize, 9. Have owner-managers give personal attention to the business, and 10. Try to treat people right.

Canadians Use More Cottons, Production Drops. Canadians used more cotton fabrics last year than in 1958, but Canadian mills produced less, according to the Cotton Institute of Canada. The increase was accounted for entirely by imported goods. Last year, Canadian mills sold 228 million yards on the home market, a decrease of 12 million yards from 1958. Meanwhile, imports of cotton goods increased from 292 million yards to 312 million.

Golden Fleece Awards. Golden Fleece achievement awards of the National Association of Wool Manufacturers were presented this year to Bertrand W. Hayward, president of Philadelphia Textile Institute; Senator Kenneth B. Keating (R., N.Y.); and G. Norman Winder, founder and president of Woolens & Worsteds of America. The awards were presented at the Association's recent annual meeting in New York.

Cotton Export Terms Announced. U. S. Department of Agriculture has announced provisions of the payment-in-kind export program for upland cotton for the 1960-61 marketing year, and in general they are unchanged from last year. Exporters who register their sales or consignments of upland cotton under the program with the New Orleans Commodity Stabilization Service Commodity Office, 120 Marais St., New Orleans 16, La., can earn payments in the form of certificates redeemable in cotton from Commodity Credit Corporation stocks. The initial rate of payment will be 6 cents per pound.

Mill Failures Up. Business failures in the textile mill products group were up nearly a third in the first four months of 1960 compared to the same period of last year—from 22 to 29. Liabilities of the failed firms were up in a slightly greater ratio—from $2.1 million to $2.9 million.

New Jersey's Governor Robert B. Meyner (left), leading advocate of increased automotive safety, receives a brightly colored Caprolan nylon auto seat belt of new design from Dr. Glenn A. Nesty, vice-president for research and development of Allied Chemical Corp.

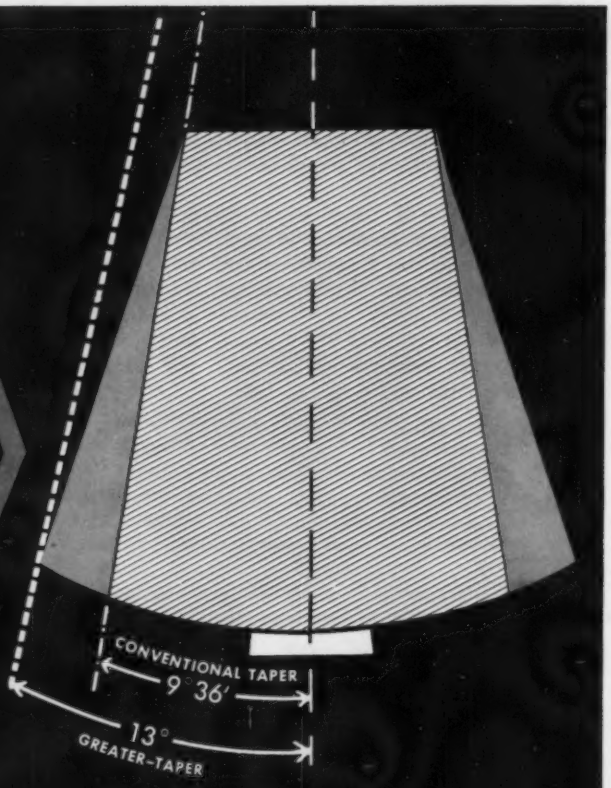
Europeans Want U. S. Goods. An increase in demand for "typically American" merchandise, particularly textiles and apparel, is foreseen by Raymond V. McNally of London, special European rep-

resentative for Commercial Factors Corp. "Europeans want and can afford apparel that's distinctively American in appearance and design," he said. But he warned that American manufacturers wanting to take advantage of this demand must first make a thorough study of the styles and price lines most acceptable to European consumers.

Research, not Subsidies, Cotton's Answer. The question of "whether we [cotton producers] can afford to rely on subsidies as a *permanent* crutch for helping us to meet price competition" was raised at the recent American Cotton Congress by Wm. Rhea Blake, executive vice-president of the National Cotton Council. His proposed solution: to put greater emphasis on production and market-

THE FOSTER *GREATER-TAPER* CONE...

Why Knitters Need It



If you sell spun knitting yarns, or if you are a knitter and do your own winding, you *need* the Foster Greater-Taper Cone, produced on the Foster Model 102.

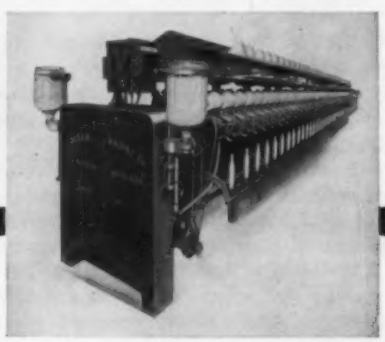
This is because Foster Greater-Taper Cone delivers freely with minimum drag at the knitting machine and thus prevents tight loops and even at times prevents breaks.

It's all a matter of clearance of yarn when the cone is full. Note in the illustration that the yarn does *not* clear the nose of a conventional 9°36' cone, but that it *does* clear the nose of the Foster Greater-Taper Cone, with room to spare, because the latter has a 13° taper, when full.

If you spin sale yarn, wind it on the Foster Model 102 and be prepared to supply the cone that knitters *need*.

If you buy yarn on cones ready for the knitting machine, insist that the cones be Foster Greater-Taper Cones and thus protect the quality of your fabrics.

THE FOSTER MODEL 102 WITH YARN CONDITIONING ATTACHMENT



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553-9

ing research to help the grower reduce or hold down his unit costs, or to accomplish the same thing through improvements in cotton quality.

Egypt Resumes Cotton Trade Relations. The resumption of normal trade relations between the producers and exporters of Egyptian cotton and their traditional customers abroad was signaled by a recent meeting in Zurich, Switzerland, of the Joint Egyptian Cotton Committee.

U. S. at Barcelona Trade Fair. The U. S. will be represented at the International Samples Fair at Barcelona, Spain, with an exhibit devoted exclusively to cotton and its products. The display is intended to build prestige and demand for cotton through promotion of ready-to-wear fashions in the Spanish market, the announcement indicated.

Merchandising Notes

American Wool Council will launch its new wool program on the first of this month, with the slogan, "Natural Wool . . . Loomed in America."

A sample garment is used by Stonecutter Mills to illustrate one of the firm's new "Veriset" fabrics of 74% Corval, 18% Verel, and 8% wool. The fabric has a wool-like hand and luster, and excellent drape.

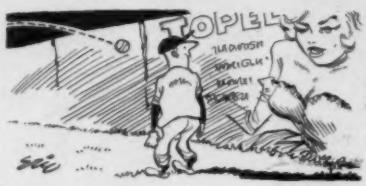
Bibb Manufacturing Co. has introduced a new type-210 combed percale sheet of 45 per cent Pima cotton, called "Imperial Pima."

Du Pont Co. reports that hand knitting yarns of Orlon Sayelle will be introduced by a number of mills next fall; among jobbers including them in their lines are Emile Bernat, Bernhard Ullman, and Spinnerin. * * * Du Pont will continue sponsorship of the June Allyson TV show as a vehicle for

promotion of its textile fibers. The program will be seen next fall on 130 stations of the CBS television network.

The William Carter Co. was one of eight winners of the "Award of Good Taste" made by American Institute of Approval. Carter was honored for three outfits of children's clothing in the first awards made by AIA.

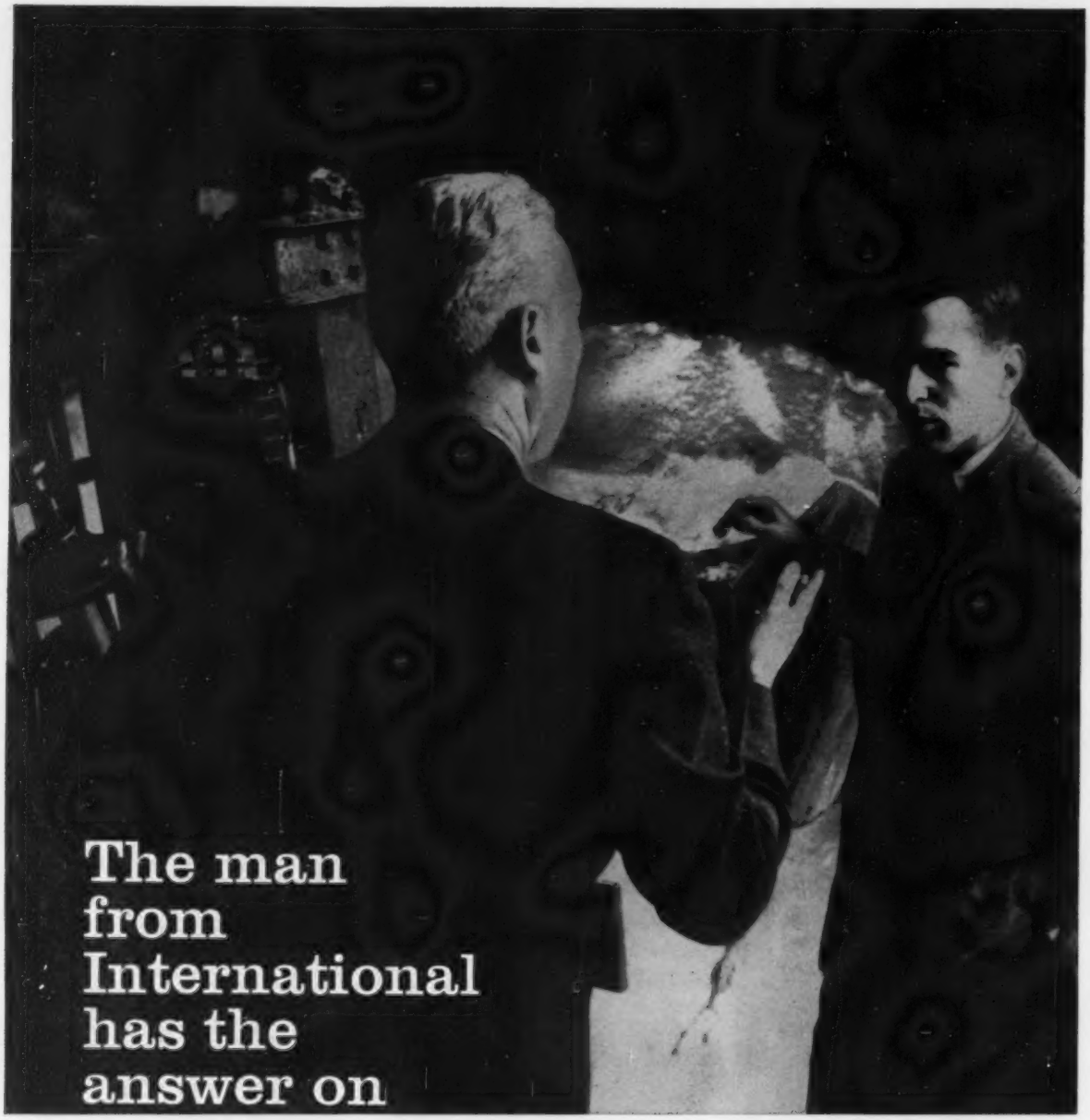
Eastman Chemical Products, Inc., and **Courtaulds Ltd.** have purchased billboard advertising space in left center field of Yankee Stadium, New York. The space



will be used jointly to show products in fabrics containing blends of Kodel and Topel, and later to promote the individual fibers of the two companies.

Roxbury Carpet Co. recently held the first of a series of distributor sales clinics at its Massachusetts plants. The program consisted of a comprehensive course on carpet selling, covering carpet construction, fibers, colors, advertising and promotion, contract carpet, and other sales points.

These spools of sewing thread, produced by Lily Mills, are wrapped in coated cellophane; packaged on a mill-developed machine.



The man from International has the answer on salt handling

A medium-capacity front-end loader proved to be the answer for this salt user. Describing the loader's operating efficiency is the man who recommended it—the International Salt Company sales engineer. Whatever your plant requirements, he can suggest the most efficient method of salt handling—choosing from conventional systems as well as the latest in pneumatic and hydraulic equipment. In many cases, salt-handling problems can be simplified by the installation of a Lixator*, International's exclusive automatic rock salt dissolver. Your local International representative knows which type of Lixator is best for your needs. Contact him, or our nearest district office: Boston, Buffalo, Charlotte, Chicago, Cincinnati, Detroit, Newark, New Orleans, New York, Phila., Pitts., St. Louis. Or write International Salt Company, Clarks Summit, Pennsylvania.

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by J. B. Goldberg
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Exclusive

FABRICS AND FINISHES

Improved Water Repellent. Minnesota Mining & Mfg. Co. has introduced an improved version of their Scotchgard durable water and oil stain repellent finish to incorporate water repellency at the same time. The new finish is said to be applicable to Dacron-cotton blend fabrics as well as to all cotton. Three companies are now offering rainwear fabrics with the new Scotchgard.

New Interlining Finish. English concern introduces a new permanent finish for interlinings, designed especially for use with crease-resisting and drip-dry garments. "Kirprima P. S." features permanent stiffness, dimensional stability, non-curl, non-chlorine retention, and wet crease recovery, as well as increased dry crease resistance.

Dacron-Cotton Sheets. Wamsutta Div., M. Lowenstein & Sons, Inc., offering sheets of 65% Dacron-35% cotton in high count construction at premium price.

Combination Durable Finish. Bradford Dyeing Assoc. reports development of new combination stain-and water-repellent finish. Product combines Scotchgard fluoro-chemical stain repellent and "Bradria" new durable water repeller developed in finisher's research laboratory at Westerly, R. I. Claim treatment provides excellent protection for rainwear, jackets, and outerwear, with no appreciable loss of effectiveness after machine washing or dry cleaning.

Washable Rayon Linings. Recently exhibited in England was a new range of washable rayon linings developed after extensive research between the manufacturer and Courtaulds Ltd., rayon producer. Allowable shrinkage is 3% and specifications cover color fastness to washing, fastness to perspiration, dimensional stability, and resistance to seam slippage. Expect applications in washable raincoats and other garments.

Flameproofing Acetate and Nylon. A California concern has introduced a fire retardant claimed to successfully flame-proof acetate or nylon as well as fabrics of mixed fibers. Application is by spraying or immersion and there is no effect on fabric tensile strength. Retreatment is required after laundering.

Improved Water Repellent. English Burberry Mills claim an improved waterproofing for rainwear based on a yarn treatment followed by a second treatment of the woven fabric. New fabric is a combination of cotton and rayon.

One-Tape Velcro. Newly introduced version of Velcro nylon tape fastener is a back-to-back type providing for fastening together on itself. Initial use is seen in the electronics and electrical industries.

Nonwoven Developments. Wellington Sears' new "Lofty Lantuck" multi-directional high-loft all-nylon interlining material is claimed to provide better insulation than conventional batts of the same bulk and hand. Manufacturing advantages are said to result from stitch strength in all directions with no distortion in sewing. Also introduced by this company's Lantuck Division is "Bias," a bias-stretch interlining material made predominantly of nylon with a latex binder. This fabric features good elasticity and high flexibility and is expected to be used in collars, fronts, and sleeve linings in outerwear, sportswear, rainwear, and children's outerwear. No cloth backing or quilting is required. The Pellon Corp. is now offering "Pelomite", composed of 95% rayon and 5% undisclosed fibers, a fusible nonwoven fabric with tiny fusing granules on one side which melt on hot ironing to form a bond with the material and outer fabric. A recent Du Pont patent issued in Great Britain describes a vapor-permeable suede-like sheet of nonwoven material made with fibers 0.5-4" long, e. g., nylon, and a surface layer of short fibers, e. g., Terylene, 0.005-0.015", both bonded together by an extensible binder (e.g., Neoprene) stretched in at least one direction by 10-50% to pull away some fibers from the binder and leave air chamber channels and surface abraded.

FIBERS AND YARNS

New Foreign Acrylic. Report that Belgian Fabelta Co. expects to produce "Acrybel" acrylic fiber early in 1961. German Bayer Co. announces plans to produce Dralon acrylic fiber in continuous form.

New Bulked Nylon Yarn. Courtaulds Ltd. is offering "Courtolon C20" to complement earlier series of bulked nylon yarns, said to have less relaxation after knitting and increased softness of hand. The new yarn provides a broken surface appearance, more closely associated with staple fiber.

Solution-Dyed Acrilan. Chemstrand Corp. has adopted the name "Spectran" for spun-dyed Acrilan acrylic staple.

Russian Synthetic Fibers. A report recently issued by members of the QM Research & Engineering Command indicates that the U.S.S.R. has developed three new synthetic fibers which have no counterparts in the U. S. These are "Enant," a nylon 7; "Ftorlon," a fluorine copolymer; and "Vin-

Continued on page 132

RÜTI

High speed looms, sizing machines and warpers for versatility, quality and top performance.

Now available in the USA through H. J. Theiler Corporation., Ashmont Ave., Whitinsville, Mass.

Ruti, specializing exclusively since 1842 in weaving mill equipment, showed four of its extensive line of high speed looms at the ATMA Exhibition at Atlantic City.

♣K 4×1 automatic loom with bobbin container for fancy fabrics. ♣A 1×1 high speed loom with Unifil. ♣J 1×1 automatic loom with box container for weaving quality fabrics from a wide range of yarn counts. ♣10 4×1 automatic bobbin changing loom for silk and synthetic fibers.

VSM Swiss Textile Machinery Group

ISO 9001

EXECUTIVE VIEWS

Prepared by a man who is closely identified with the textile industry.

Cotton and the Welfare State

THE DESTINIES of the farmers in the United States are almost wholly in the hands of the Federal Government. There is no present reason to think that for several generations at least this condition will change, unless a very severe depression forces the Government to abandon all of its socialistic policies. And there is an excellent likelihood that such a depression would force upon the United States a totalitarian socialist dictatorship. For the time being however, we can consider some of the evils that have been brought about by government meddling with the normal economic forces involved in the production of cotton.

Cotton has been affected far more adversely by government meddling than any other crop. The different methods of harvesting corn, wheat, soy beans, and farm products other than cotton have little if any effect upon their end use. Changes in the methods of handling cotton have had a tremendous effect on the end uses of the lint, but the cotton spinning industry was rather slow to realize just what was being done to it by these government policies with regard to the production and ginning of cotton.

The only valid reason for producing cotton is to spin yarn and to make fabrics from that yarn.

"It is indeed a ridiculous state of affairs when grading standards for cotton have practically no relationship to spinning characteristics"

The other uses for cotton are rather trifling. The attitude of the government in its farm support program has apparently been based upon the assumption that the reason for raising cotton is to provide a comfortable living for all of the people growing it, and tremendous wealth for those growing it on a large scale. The needs of the spinner have been almost completely disregarded when they sharply conflicted with the interests of the farmer.

Every effort was therefore made by the U. S. Department of Agriculture to produce a cotton which would carry a high nominal grade under a grading system which is perfectly ridiculous from the spinner's standpoint. The government cotton classer who is supposed to be a super-expert at his trade will drool over a sample of cotton that is practically unspinnable, and will sometimes down-grade by two full grades the cotton which the spinning mill would far rather have than the other cotton with the theoretically high grade.

THAT THIS IS unquestionably true is amply proved by events of the past year or two when prominent spinners have actually been paying a premium to get cotton that the government classers would regard with contempt, and rejecting cotton so highly regarded by the classers. The introduction by the government of its Plan "B" arrangement which permits cotton planters to produce cotton in excess of the quota which carries the full parity loan value has made a very serious change in the whole cotton situation.

The cotton raised under Plan "A," which is a quota proposition and which mostly goes into the government loan and is later marketed by the government, can be over-dried, over-machined, over-lint-cleaned, and practically ruined at the gins and yet given a very high nominal grade by the cotton classers which will result in the farmer getting the highest possible loan value for this cotton. The fact that this cotton is sometimes almost unspinnable on account of

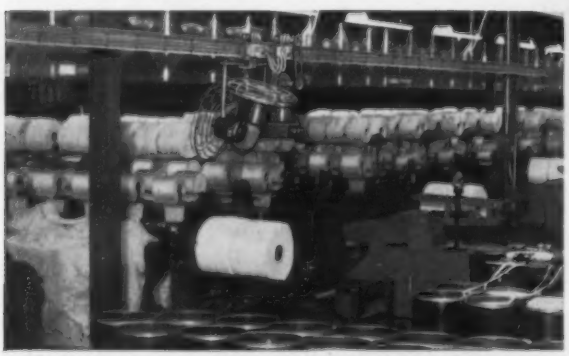
Now...keep your work areas clean automatically, with specially designed Amco Cleaners!

Amco has developed a wide selection of automatic cleaning equipment . . . designed to cut down manual cleaning, improve quality, and step up mill production.

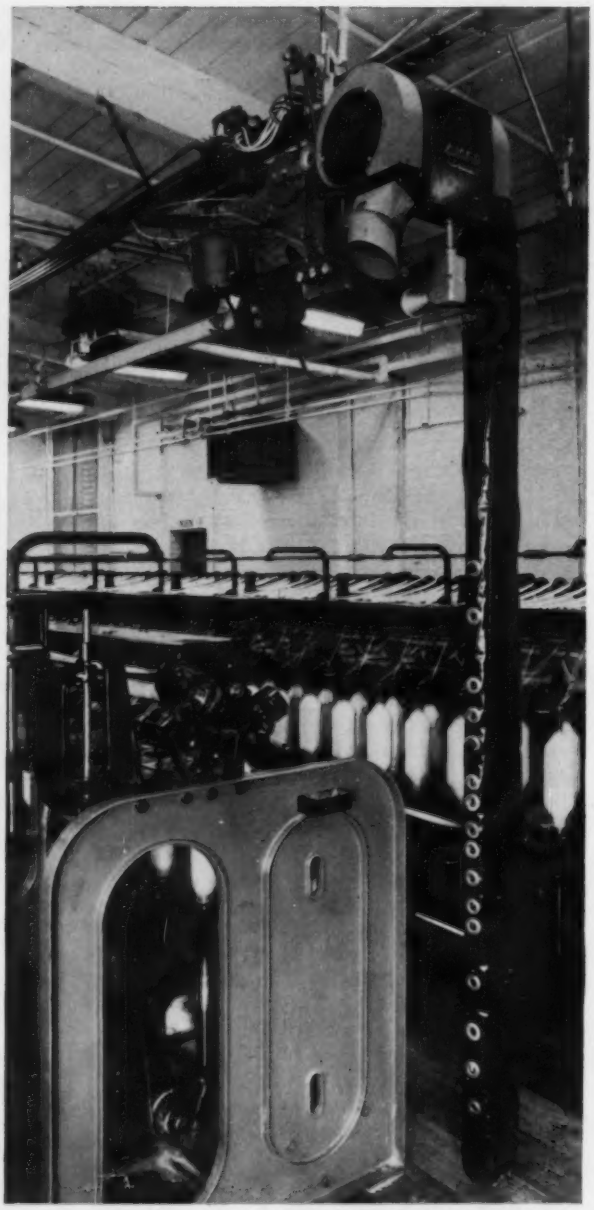
For money-saving facts about Amco Cleaners, call American Moistening Company — an organization with more than 70 years' experience serving the textile field.

Helicone Loom Cleaners improve quality of fabrics by preventing waste accumulation on stop motions, drop wires, harnesses and reed caps.

Amco Loom Cleaners over Draper shuttleless looms. Sheeting is being woven at high relative humidity.



Amco Ceiling Cleaner provides automatic cleaning of ceiling, beams, walls and other surfaces. Excellent for card room areas.



Amco's electronically controlled Roving Frame and Ceiling Cleaner. Air delivery boot takes care of specific lint-collecting trouble spots.

AMCO

SINCE 1888

Air Conditioning Equipment — Textile Specialties

American Moistening Company, Cleveland, North Carolina

Branches: Atlanta, Ga., Providence, R. I., Toronto, Ont.

"Surely the Department of Agriculture can work out some sort of grading system which will permit the marketing of cotton under a pricing system that will give the spinning mills what they pay for . . . ."

what has been done to it, and that the mills generally are screaming about the trouble they have in running it and in making clean yarn, does not seem to affect the political desirability of looking out for the farmer at the expense of the spinner and the general public.

The Plan "B" cotton has opened up an entirely new series of possibilities, since it carries a very low parity valuation and is in effect "free cotton," which can be disposed of by old-fashioned marketing methods without any intermediate meddling by the USDA. Mills have been avidly picking up this Plan "B" cotton ginned to their specifications instead of being put through the ruinous processes which are almost inescapable for the Plan "A" cotton.

IT IS INDEED a ridiculous state of affairs when grading standards for cotton have practically no relationship to spinning characteristics. The grading system we use is an international system and changing it is cumbersome and frequently impossible as far as export cotton is concerned, but it would seem that there is nothing to prevent our Department of Agriculture recognizing the needs of our domestic spinners and adopting grading policies calculated to benefit the spinners—and the public which suffers from the production of inferior yarn and cloth. It is a virtual certainty that all foreign buyers of American cotton would enthusiastically accept any such grading system.

Such a grading system as the spinning mills need would, however, directly affect the cotton farmers and would probably necessitate firing all of the old-fashioned cotton classers who like cotton to look as though it had been run through a garnett or waste machine so that it has that smooth, dead, useless appearance so dear to their hearts.

We understand that the Plan "B" arrangement proved so popular and profitable last season that the entire State of California is adopting it, and that will of course mean that the California cotton crop will be increased by about 40 per cent. Undoubtedly many other farmers outside of California will grow this extra cotton, which will be bad news for the taxpayers of the United States who have to put up the money for subsidizing the sale of export cotton. The taxpayer, who in general probably knows nothing about what is being done to him, has been putting up eight cents a pound to make it possible to cut the price of American cotton enough to sell it in export

Continued on page 123

FUTURE EVENTS

Date		Event	Location
Sept.	8-9	Combed Yarn Spinners Association	The Cloister Sea Island, Ga.
	8-9	Textile Quality Control Association	Clemson House Clemson, S. C.
	9	Northern New England Section AATCC	Wachusett Country Club West Boylston, Mass.
	10	Southeastern Section AATCC	Atlanta Athletic Club Atlanta, Ga.
	10	South Central Section AATCC	Hotel Patten Chattanooga, Tenn.
	14-17	Southeastern Maintenance & Engineering Show	State Fair Arena Raleigh, N. C.
	15-16	Textile Processing Symposium, American Gas Association	Sedgefield Inn Greensboro, N. C.
	15-16	Chattanooga Yarn Association outing	The Read House Chattanooga, Tenn.
	17	Southern Textile Overseers Association family meeting	Greenwood, S. C.
	17-21	National Safety Congress	Conrad Hilton Chicago, Ill.
	18-19	Institute of Textile Technology technical advisory committee and board of trustees	I.T.T. Charlottesville, Va.
	22-23	First International Textile Dyestuffs, Finishes, and Auxiliaries Exhibition	Free Trade Hall Manchester, England
	23	Western New England Section AATCC	Blake's Restaurant Springfield, Mass.
	23-24	Piedmont Section AATCC	Hotel Charlotte Charlotte, N. C.
	28-30	North Carolina Textile Manufacturers Association meeting	The Carolina Pinehurst, N. C.
	28-29	Chemical Finishing Conference	Statler Hotel Washington, D. C.
Oct.	3-7	Southern Textile Exposition	Textile Hall Greenville, S. C.
	6-8	AATCC national convention	Sharaton Hotel Philadelphia, Pa.
	7	Southern Textile Overseers Association annual meeting	Hotel Greenville Greenville, S. C.
	19-22	Carded Yarn Association annual meeting	Grove Park Inn Asheville, N. C.
	22	Textile Operating Executives of Georgia slashing and weaving discussion	Georgia Tech Atlanta, Ga.
	22	Alabama Textile Education Foundation	Auburn University Auburn, Ala.
Nov.	12	Textile Education Foundation Inc.	Georgia Tech Atlanta, Ga.
	12	Alabama Textile Operating Executives carding and spinning discussion	Thach Auditorium Auburn, Ala.

Some things don't move very fast...

Everyone's been stuck with stock that barely moved. You know, those sluggish items that just sprawl there on the shelf...Well, whatever merchandise you're trying to move, you can depend on this: Du Pont fiber trademarks give goods a selling edge. People know them best. Trust them. Prefer them. (Fact: 4 to 1, consumers in a recent survey said they'd rather have Du Pont make the fiber in men's socks.)...And these fibers stay miles ahead in consumer preference, thanks to Du Pont's king-size advertising program, including "THE DU PONT SHOW WITH JUNE ALLYSON"... Darn good reasons to feature Du Pont fiber trademarks in labeling, advertising and promoting your goods.

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NYLON "ORLON"®* "DACRON"®**
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...GIVE YOU A SELLING EDGE!

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In actual day to day operation where the real worth of machinery is tested, Sims new Stainless Steel 75 psi reversed dished head 44 Dry Cans* are proven superior. They require less horsepower . . . are easier on bearings . . . and save floor space with no loss in drying surface. And the chain drive is on one side of the can, while the steam fittings are on the other side . . . permitting maintenance of the drive without time lost waiting for steam pipes to cool.
Furnished Teflon-coated if desired.

FOR ECONOMY AND QUALITY. Our modern and progressive metal-working shops, our skilled craftsmen, our know how—these are guarantees of quality. For custom tailoring of stainless steel, call, wire, or write *now*.

*U.S. PAT. OFF. NO. 2779104

Fabricated and installed at Lanett Bleachery and Dye Works, Lanett, Alabama by Sims Metal Works.

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Friday Textile Machine & Supply Co., Gastonia, N. C.

FABRICATORS SINCE 1928

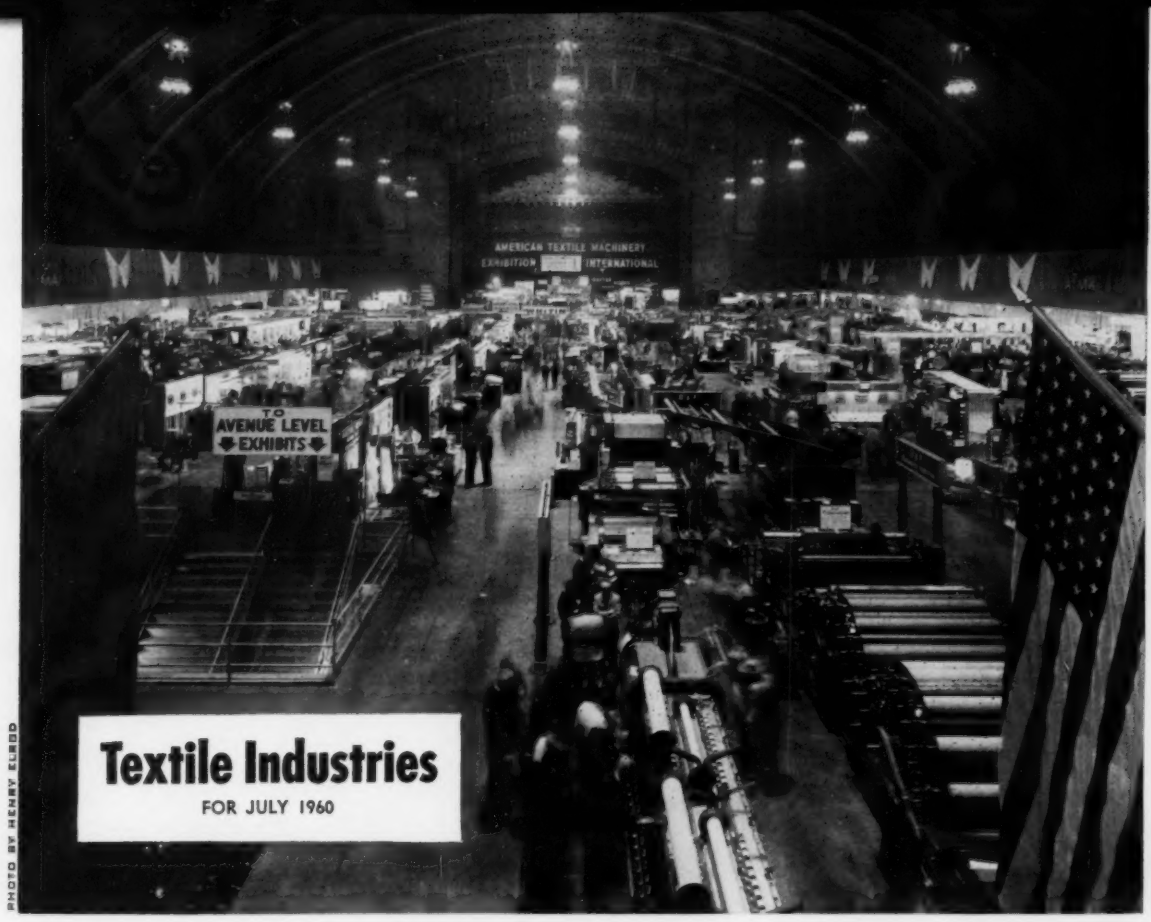


PHOTO BY HENRY ELROD

What was NEW at Atlantic City

Staff report

THE BIG SHOW was a big success—that was the nearly unanimous verdict of about 25,000 textile men who visited the American Textile Machinery Exhibition-International, and their sentiments were echoed by the 400-odd exhibitors.

The mill men looked, and what they saw convinced them, if they needed convincing, that he who doesn't modernize is dead.

The exhibitors talked and listened, and what they heard included a surprising number of firm orders, and enough red-hot leads to keep them traveling from mill to mill until Greenville Show time.

Here are some comments that mill men made to TI's editors:

General superintendent of several southern mills, "I have been attending textile shows for over 30 years. There is more technological progress in evidence at this show than any I have ever witnessed." He also said that he

About This Report

■ THE SIZE of the ATME-I and the literally hundreds of new developments displayed make it possible for us to touch on nothing but the highlights—and not all of them. For complete details of all new developments shown at Atlantic City, see the New Product Parade in our April, May, and June issues, as well as in this one. The balance will be covered in future issues. Or if you want more information in a hurry, write to the editors of TEXTILE INDUSTRIES.

Visitors thronged TEXTILE INDUSTRIES' booth during Show week; they were greeted by TI's affable business manager, John C. Cook (right).

Only picker displayed at the Show was Trutzschler's automatic-doffing model.

felt that foreign manufacturers had been influential in making American equipment builders get out of a rut and build better machinery.

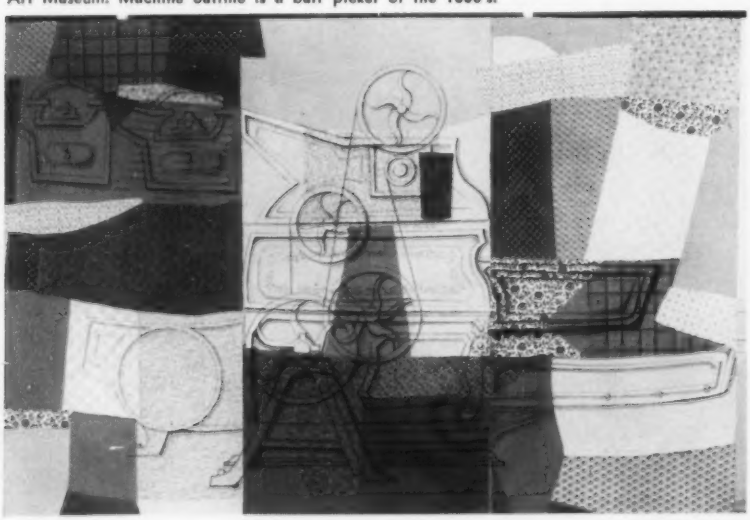
Vice-president of a large textile company, "I was at the Milan Show last fall and I came here feeling that ATME would be anticlimax. I couldn't have been more wrong."

Of course all was not sweetness and light. There were complaints. Some were trivial; for instance, one textile man who visited the Milan Show said, "I sure miss that wonderful Italian food." (We recommend that he try Luigi's as a good second best.)

Some complaints were more serious. The president of a large mill noted that foreign exhibitors were much more aggressive than their American counterparts, contrary to the legend of the American go-getter. When he walked into a foreign exhibitor's booth, he was greeted by a representative and shown all the equipment in the booth before being permitted to leave. On the contrary, in an American supplier's booth he usually had to ask someone to tell him about the equipment. (TI's editors note, however, that this doesn't jibe with some of the hard sell they observed during the week—in both American and foreign exhibitors' booths.)

And of course there was general dissatisfaction with the rumpled state of the Auditorium, with the modernization far from completed despite firm promises from the Auditorium management. And, as usual, Atlantic City endeared itself to no one, with its inaccessibility, high prices, poor service, and general air of a clip-joint-by-the-sea.

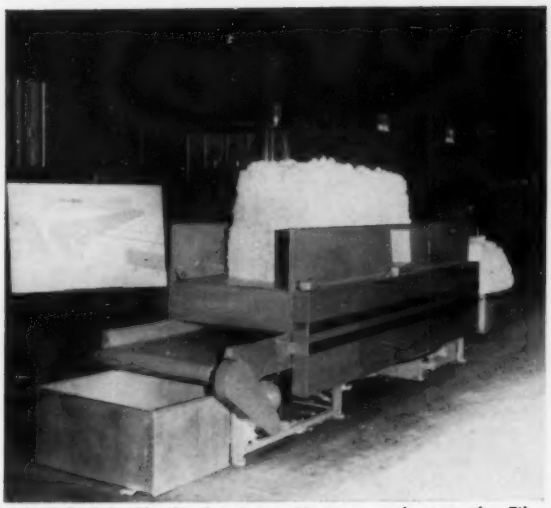
Background for the Curtis & Marble Machine Co. booth was a cloth "collage" mural 8' high by 30' long, designed by Sante Graziani, head of the School of the Worcester (Mass.) Art Museum. Machine outline is a burr picker of the 1880's.



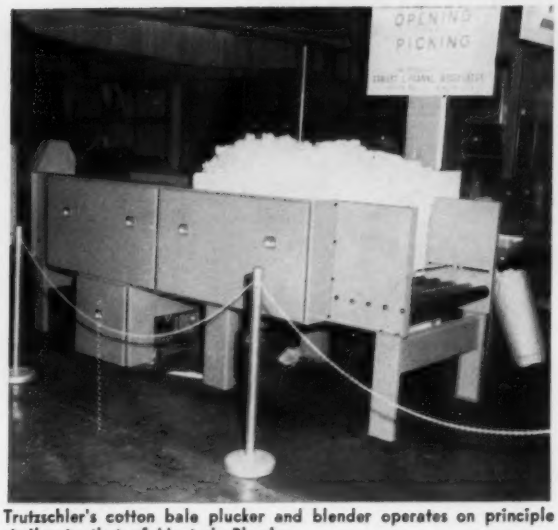
Opening and picking

In the opening department, attention was focused on two remarkably similar machines — *James Hunter's* Model AN Bale Blender and the bale plucker and blender of *Trutzschler & Co.* In each case, bales of cotton are conveyed across devices which pluck small tufts of fiber from them. The Hunter machine uses a spiked beater; the Trutzschler employs steel-bladed fingers.

Considerable interest was also shown in Davidson - Kennedy's SRRL opener - blender - cleaner, now sold by *Saco-Lowell Shops*, who stress its efficiency in removing pepper trash from cotton overmachined at the gin.



Multi-Tuft Bale Blender by James Hunter complements the Fiber Meter blending system, feeds small tufts from each bale.



Trutzschler's cotton bale plucker and blender operates on principle similar to that of Hunter's Blender.

Only picker on display at the Show was *Trutzschler's* Model SMVA, which features automatic lap doffing.

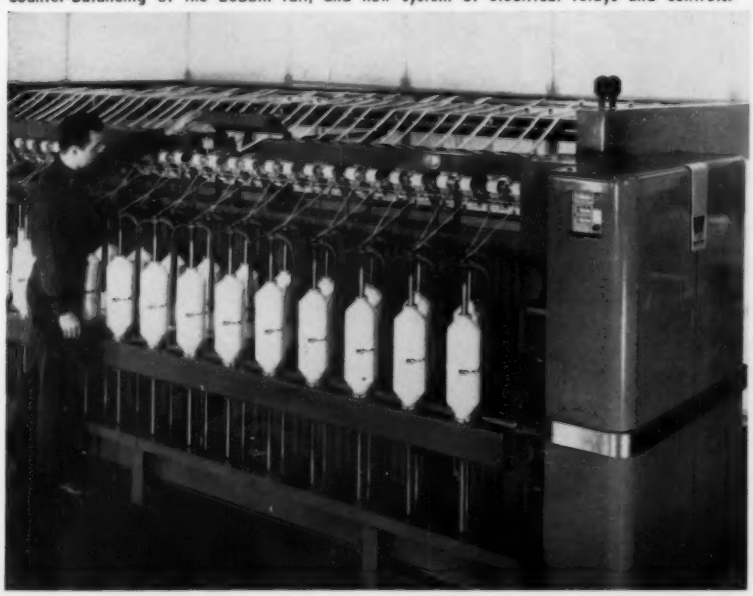
Carding

Top drawing card in this department was the Daiwa carding attachment shown by *Edward S. Rudnick*. This device, reported to cost about $2,300 per card, is essentially a second licker-in, consisting of a perforated suction roll with wire teeth. The licker-in speed is increased considerably, and claims are made for production increases up to 100%, with better cleaning efficiency, fewer neps, and a more even sliver.

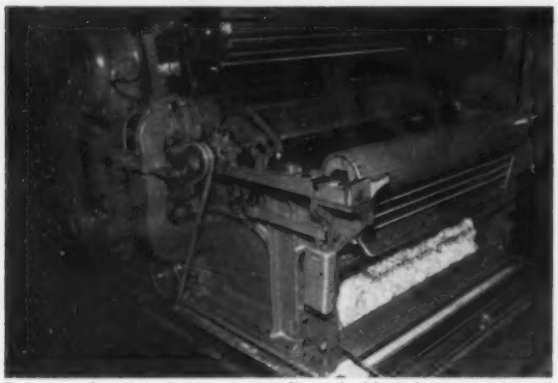
"Cardpen," a drafting attachment to replace the calender rolls on the card, was a feature of *Abington Textile Machinery Works'* booth. The idea is by no means new—for instance, one English card was so equipped for a while right after World War II, and there are several U.S. patents covering such devices. But one English mill is reported to have 177 cards equipped with "Cardpen," and to have increased production 25% after they were installed.

The SRRL granular card was also on display. Ironically, this

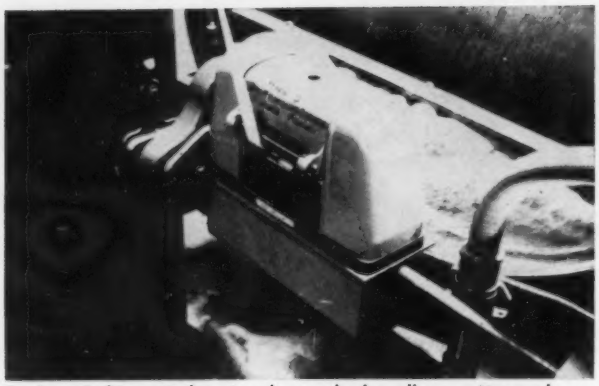
Whitin Machine Works featured the Model P roving frame. Flyer speeds up to 1,200 rpm are claimed, and up to six pounds of roving on the 14 x 7 package. The frame, which is commercially available, features a new cone drive, new-type precision spindle, spring counter-balancing of the bobbin rail, and new system of electrical relays and controls.



One of the reasons the Show cost so much. At the overtime rates in effect when a TI editor made this photo, laborers cost an exhibitor $4.95 per hour, electricians $8.62½.



Daiwa carding attachment, essentially a double licker-in, is claimed to increase production and cleaning efficiency, reduce neps.



Cardpen drafting attachment replaces calender rolls on cotton card to give production increase; handled in U. S. by Abington.

cotton research development is reported to be not too satisfactory for cotton, but great for certain types of synthetic staples (Du Pont is enthusiastic enough about the granular conversion to have published a bulletin on its application in carding 1.5-denier Dacron staple).

B. S. Roy & Sons Co., who sell the granular top, reported at the Show that the preopener rolls developed by SRRL for use in conjunction with the granular conversion, are also being bought separately by some mills for use with conventional flats.

Drawing

High speed was the feature stressed by most drawing frame exhibitors, with all claiming speeds of at least 600 fpm, and one—*American Rieter*—operating at 625 fpm.

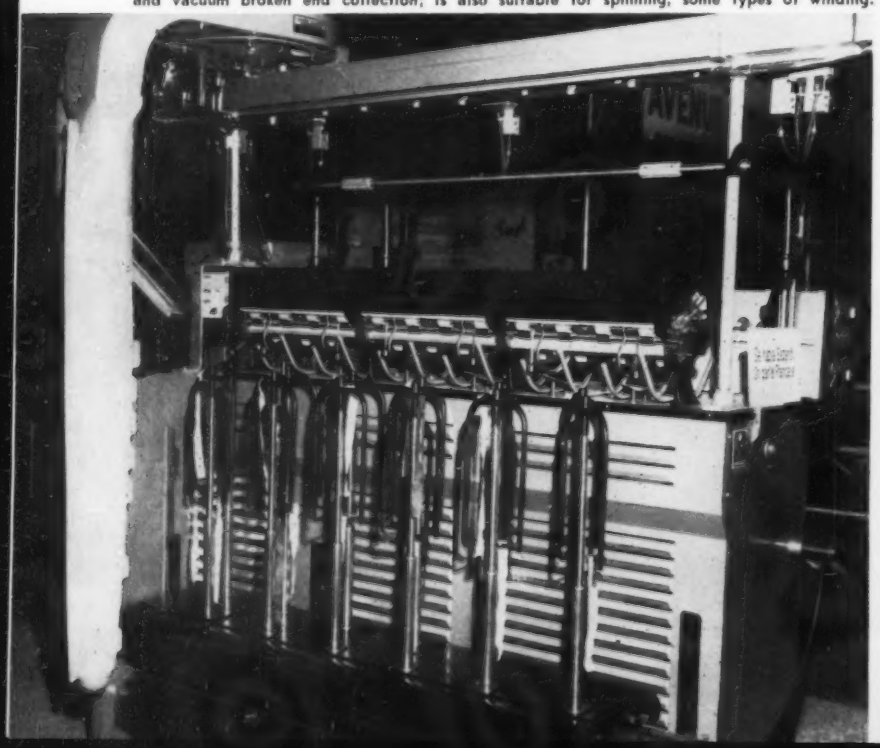
The Saco-Lowell/Uster Versamatic frame with automatic draft control for a more uniform sliver, which attracted so much attention at Milan last fall when an experimental unit was shown, is now said to be commercially available.

Another device for adjusting draft to control drawing sliver variability was shown by *Edward S. Rudnick*. Also applicable to Pin Drafters, this device is called "Ever-Even," and can be installed on conventional drawing frames.

Rudnick also showed a drawing frame with automatic can changing, producing small cans for the OM-S sliver-to-yarn spinning frame.

SACM's draw frame featured a stop motion that is actuated by tangled and split sliver. Piecing up is greatly simplified, since the operative does not have to rub the sliver ends together.

Parks-Cramer's Inter-Vac system includes intermittent suction from louvers in back of spindles and vacuum broken end collection; is also suitable for spinning, some types of winding.



Roving frame cleaner of American Moistening Co. oscillates 180° continuously.

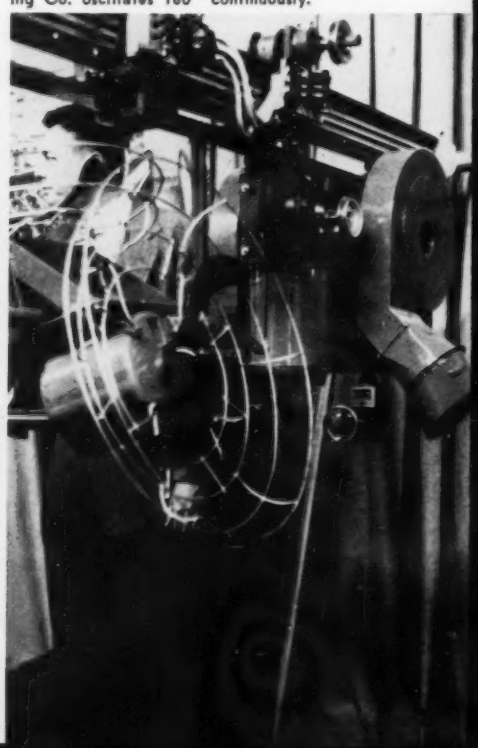


PHOTO BY HENRY ELROD

A big drawing card in Saco-Lowell's booth was the Versa-Matic drawing frame, at left in the Saco-Lowell/Uster version with automatic draft control, and at the right in the improved standard version. The automatic model is now commercially available.

Roving

The undoubted hit of the Show, according to almost every mill man questioned, was *Saco-Lowell's* Rovematic roving frame, producing a 14 x 7 package at 1,200 rpm. This frame features a unique telescoping spindle design, and elimination of cones and cone belts through use of a PIV drive. Orders are being taken for 1961 delivery.

Whitin Machine Works also showed a 14 x 7 frame operating at 1,200 rpm, its Model P. The frame has new-type flyers and spindles, and a new cone drive arrangement. The drive has a push button to jog the motor to position the flyers correctly.

A third 14 x 7 frame was shown by *American Rieter;* of improved conventional design, this machine is claimed to eliminate count variation from front to back and from empty to full bobbin.

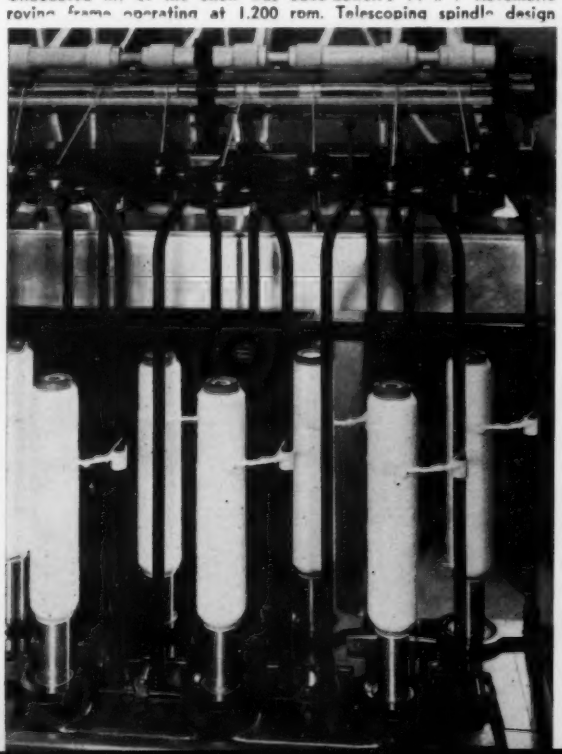
To clean the bobbins from these large frames, *Terrell Machine Co.* showed its Type M bobbin cleaner, which will clean the 14 x 7 bobbins at the rate of 66 per minute.

Spinning

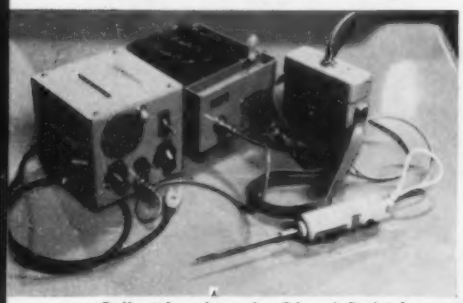
Little that was really new was offered in the spinning department; most exhibitors were stressing improvements on already-proven designs.

The biggest crowds were attracted to the automatic doffer of *Kanegafuchi Machine Mfg. Co.,* which was operating despite being damaged in transit from Japan. The doffer, which is pictured elsewhere on these pages, had no competitors at the Show, since Willcox & Gibbs and Deering

Undoubted hit of the Show was Saco-Lowell's 14 x 7 Rovematic roving frame operating at 1,200 rpm. Telescoping spindle design eliminates traversing carriage, and cones and cone belts are replaced by PIV variable speed units.

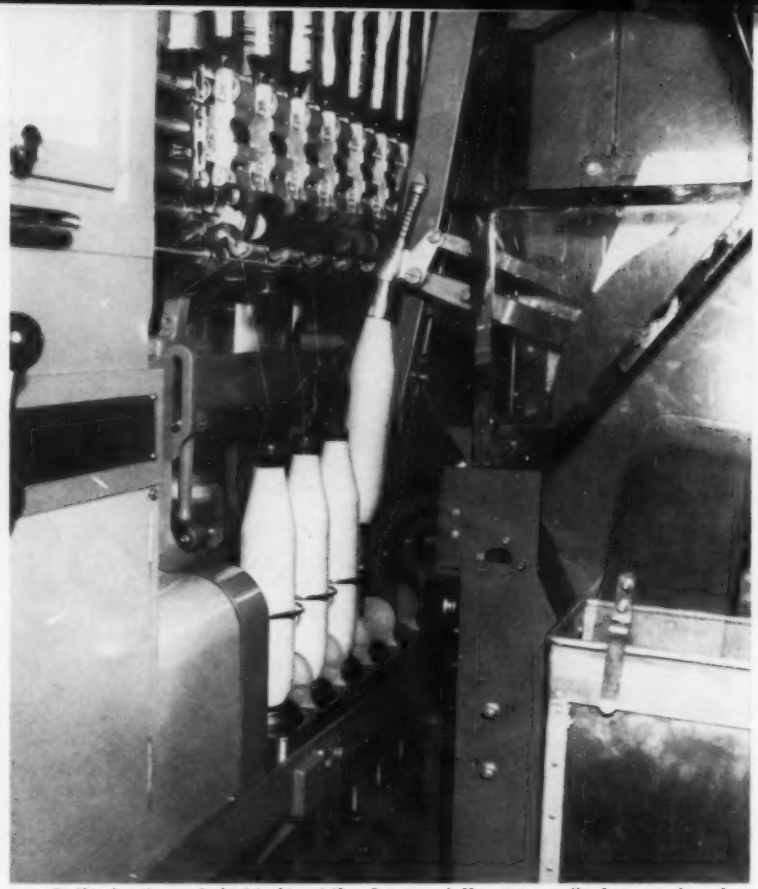


NEW at Atlantic City



Roll picker shown by Edward Rudnick operates on rechargeable batteries.

Schweiter automatic filling winder has suction dust removal device.



Auto-Doffer by Kanegafuchi Machine Mfg. Co. can doff a 400-spindle frame in less than two minutes, doffing both sides simultaneously.

Milliken did not show theirs.

The doffer shown at Atlantic City is available in permanently mounted and portable types.

Typical of improvements shown were a redesigned MagneDraft system by *Saco-Lowell*, which now permits end-around piecing; and the Cavalla-Roth changeover of *Dixon Corp.*, which consists of a specially shaped nose bar or nose-bar clip coupled with a spring tensioning system for the lower apron.

Weaving

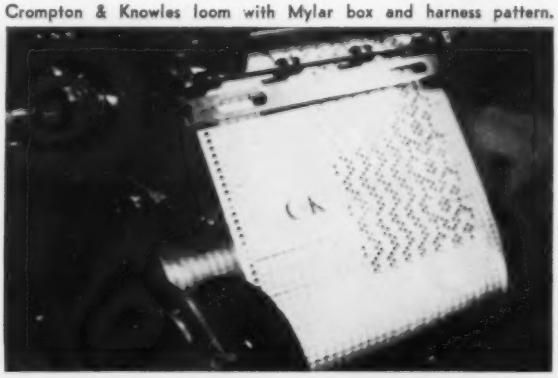
Since shuttleless looms have been the big recent news in weaving, ATME must be conceded to be a not-too-good second to Milan in this department. Of the half-dozen or more shuttleless looms shown at Milan, only two were seen at Atlantic City.

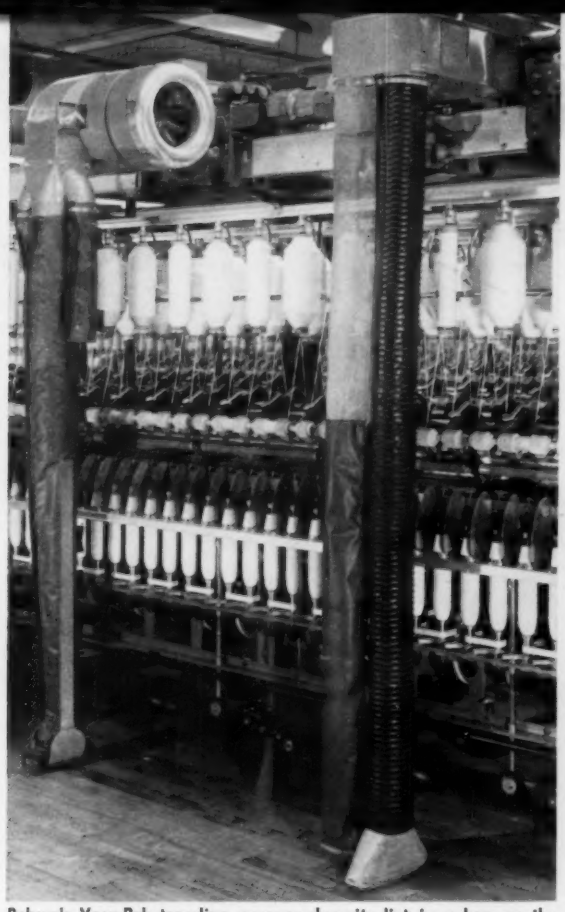
Least familiar to American eyes was the pneumatic loom of *AB Maxbo*, which played to big crowds all week, weaving 44-inch 80-squares on a 48-inch loom.

Draper Corp. had its first public showing in this country of the DSL; a 46-inch version of which was running at slow speed to permit inspection of its operation. Both looms are at present limited

Maxbo pneumatic loom attracted crowds all during Show week.

Crompton & Knowles loom with Mylar box and harness pattern.





Bahson's Vacu-Pak traveling sweeper deposits lint in a bag on the cleaner, rather than doffing it at the end of the line.

Uniconer shown by Leesona Corp. operates at up to 1,200 ypm, has an automatic knotting device at each spindle.

to spun yarns and to medium and coarse goods, although Draper reports promising results in its research to perfect a version of the DSL for weaving filaments.

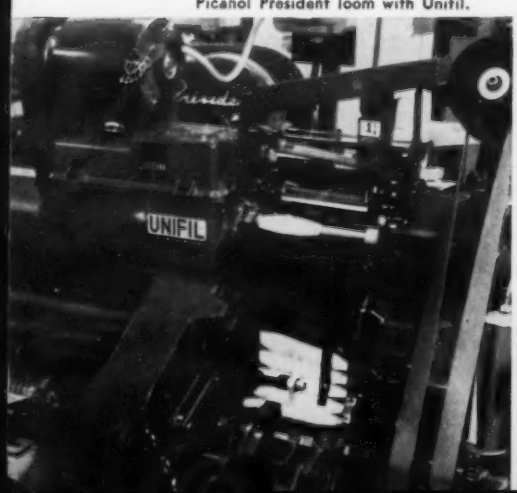
The question of box loaders vs Unifil, which was a feature of the Milan Show, was pretty much left hanging in the air at Atlantic City, since several of the most prominent European box loaders were not shown.

Techniques for weaving stretch yarns were demonstrated at the *Leesona Corp.* booth, where a Draper XD with Unifil was weaving a 90 x 78 Bedford cord with a 40s combed cotton warp and a 2-ply 70-denier Saaba filling.

At the *Crompton & Knowles* booth, the new C-7A loom drew the biggest crowds. The C-7A features push button control, new drive which replaces the mechanical brake and clutch, and complete absence of mechanical protection parts.

Among the novelties attracting the most attention was the single-shuttle automatic terry towel loom of *Adolph Saurer Ltd.*, equipped with the Huttwil name-weaving apparatus. This electromagnetic device permits the weaver to change the design from one name to another in a minute or less.

Picanol President loom with Unifil.

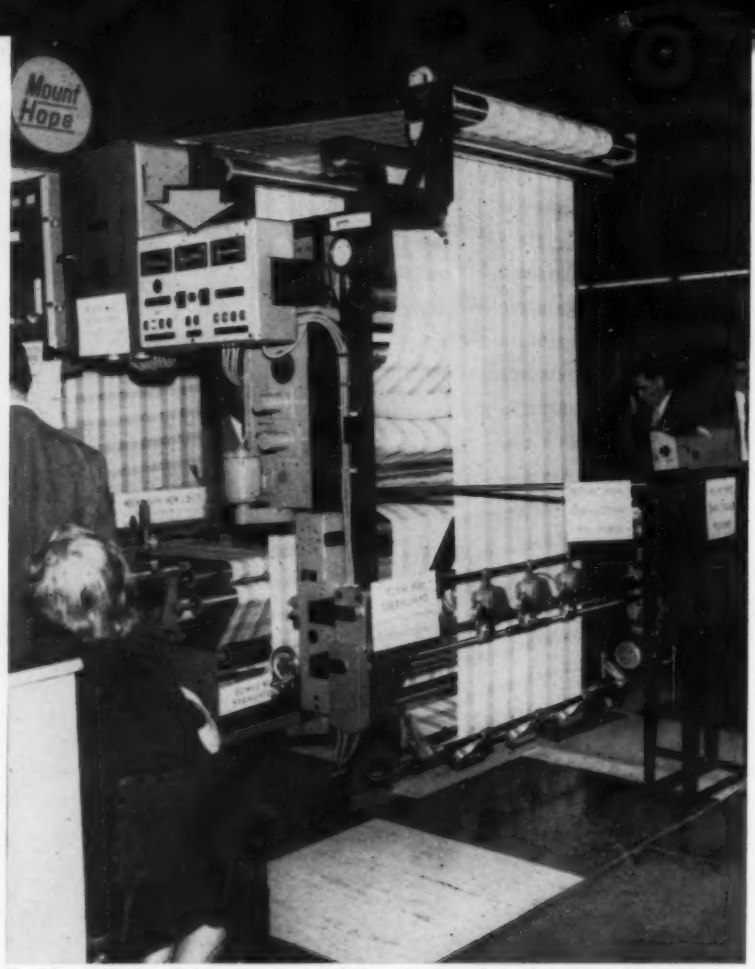


American Moistening Co.'s vacuum lint collector removes shed from beneath drop wires.

NEW at Atlantic City

GPE Controls' booth featured a do-it-yourself demonstrator unit of its Line Follower Control.

Foxboro's dolly washer control system controls complete cloth washing cycle.

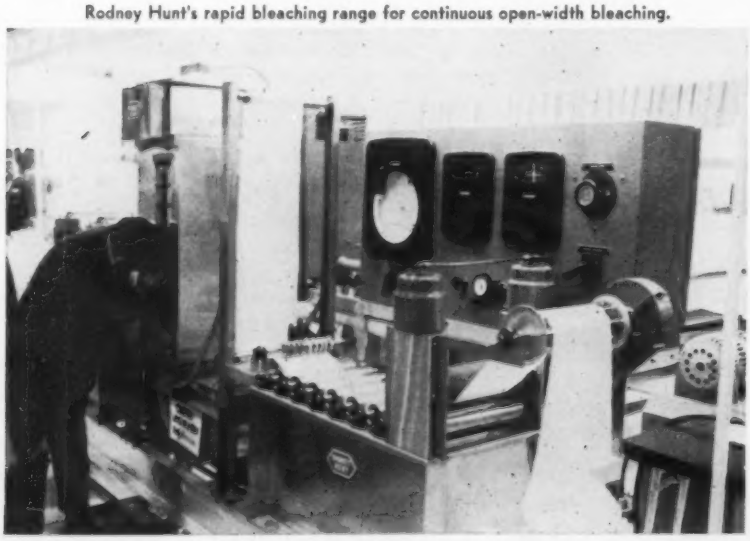


On Mount Hope's Orthomat weft straightener, pointers (arrow) indicate bow and skew. Impulses from the control correct the defect, or flash a light for uncorrectable distortions.

Wet Processing

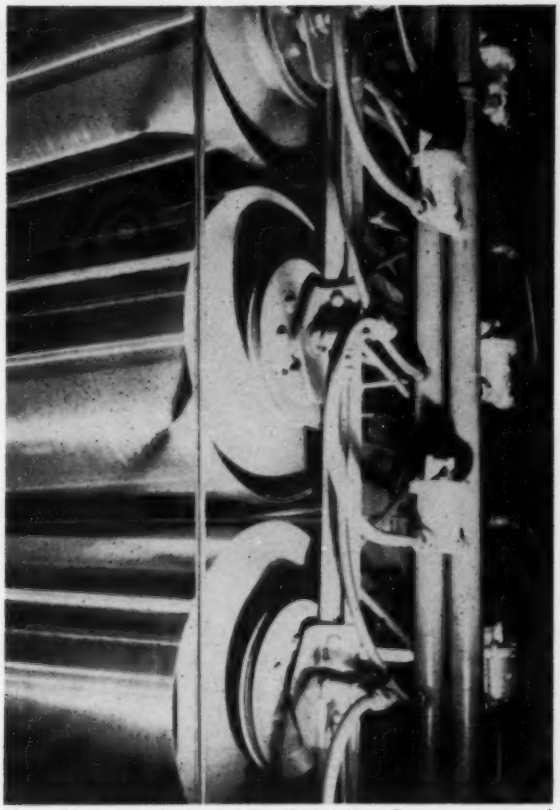
Bleachers, dyers, and finishers had a rare opportunity to appraise wet processing equipment manufactured on both sides of the Atlantic. The more discerning could try to detect the differences in the production philosophies of the various nations, as reflected in equipment design. At least one American observer commented that foreign equipment tended to be of more unusual design, and constructed for incredibly long life.

Rodney Hunt's rapid bleaching range for continuous open-width bleaching.

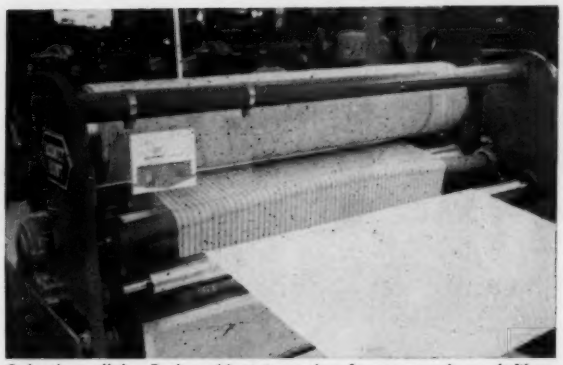


Of potential interest perhaps to cotton bleachers was an experimental model of a high-pressure continuous bleaching machine manufactured by *James Hunter Machine Co.* for Becco. If proved practical, it can reduce bleaching time considerably and may also have application in dyeing synthetic fabrics. Another advance in continuous bleaching, also aimed at the reduction of bleaching time, was demonstrated on a laboratory scale by *Rodney Hunt Machine Co.-Du Pont.*

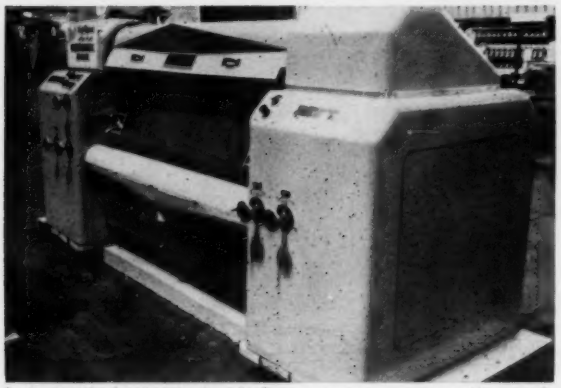
Among foreign exhibits was the new model of the entering end of the Standfast Continuous Molten Metal Dyeing Range. In all likelihood this equipment will not replace vat dyeing ranges in the U. S., but it can supplement machinery commonly found in American dyehouses, and is attractive where



These drying cans by Unistel Textile Machine Corp. rotate around stationary journals, eliminating rotary joints.



Calender roll by Rodney Hunt is made of compressed wood fiber. Rubber sleeve on Aquatrol expander is only moving part.



Parks & Woolson's Merrimack shear operates at up to 40 ypm. It has automatic or semi-automatic controls for seam jumping.

extreme matching of shades is essential.

A trend in the design of tenter frames was much in evidence at the Show: the construction of a more compact, lower housing unit. Likewise in evidence were improvements in air circulation and distribution in dryers.

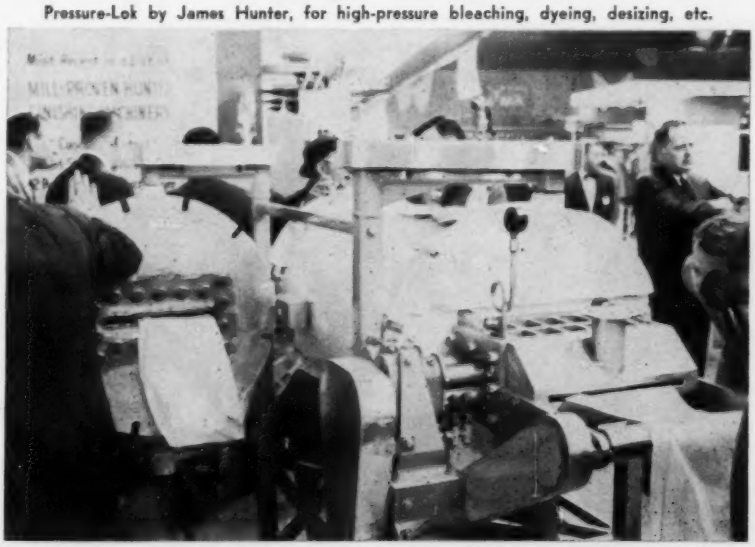
One of the most important tools of modern wet processing, it was obvious at the Show, is instrumentation for recording and controlling operations. A notable example was the dolly washer control systems shown by *Foxboro Co.* and *Taylor Instrument Cos.* Both eliminate need for manual supervision of the many steps from scouring through rinsing and finishing.

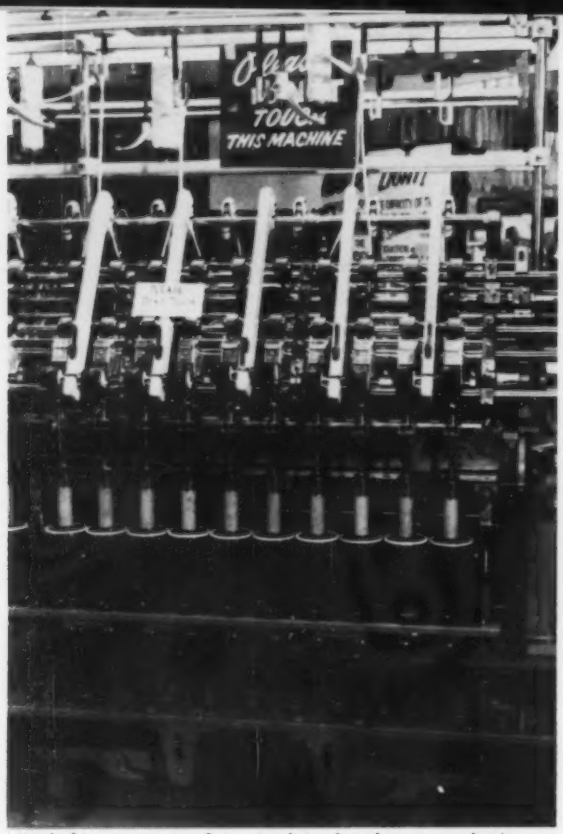
From a general appraisal of the wet processing equipment at the Show, it is apparent that sound engineering is not the sole property of any one nation. For much in evidence was the trend, already established some years ago among U. S. manufacturers, to pool know-how and engineering facilities with manufacturers from other nations.

Woolen and worsted

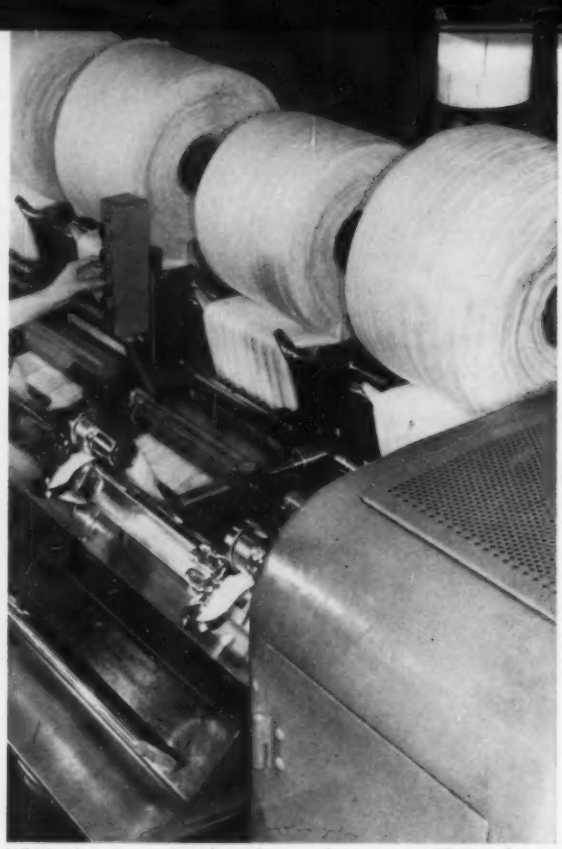
In the woolen and worsted division, the most attention-getting if not the most immediately practical exhibit was the pot-type spinning machine of *Hiroshima Precision Machine Works.* This substitutes a revolving container or pot for the ring, traveler, and

Pressure-Lok by James Hunter, for high-pressure bleaching, dyeing, desizing, etc.





Mitsubishi pot spinning frame is claimed to have a productive capacity three times greater than a ring frame of similar size.



Whitin American worsted comber produces up to 75 pounds per hour from its six-head delivery at 125 nips per minute.

bobbin, and is guaranteed to operate at 19,000 rpm. Spinning of up to 70s worsted yarns is reported. Like the Prince-Smith Centrifugal system, the Hiroshima removes the yarn from the pot by back-winding, instead of by inserting an expandable sheet into the revolving cylinder as in the McCann system.

Like other pot spinning machines, power consumption of the Hiroshima is high—40 hp for 256 spindles spinning a quite small package.

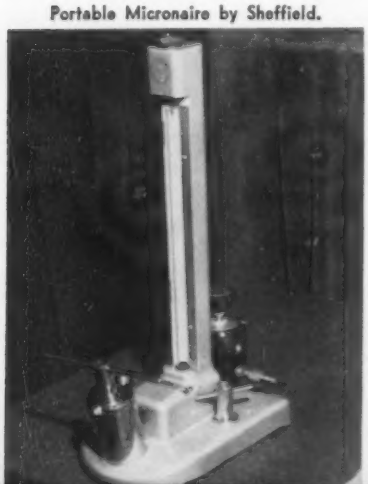
A more conventional frame, for the woolen system, was introduced at the Show by *Whitin Machine Works*. Called "Flex-Spin," it features balloon control rings, a new variable speed drum drive, longer traverse, simplified spindle drive, and antifriction spindle with new hand brake.

Davis & Furber's Model H woolen frame has an unusual tension control device on top of the bobbin (see illustration). It is designed to relieve yarn tension at the bite of the front rolls and below. The frame also features variable speed spinning, balloon rings, and large packages.

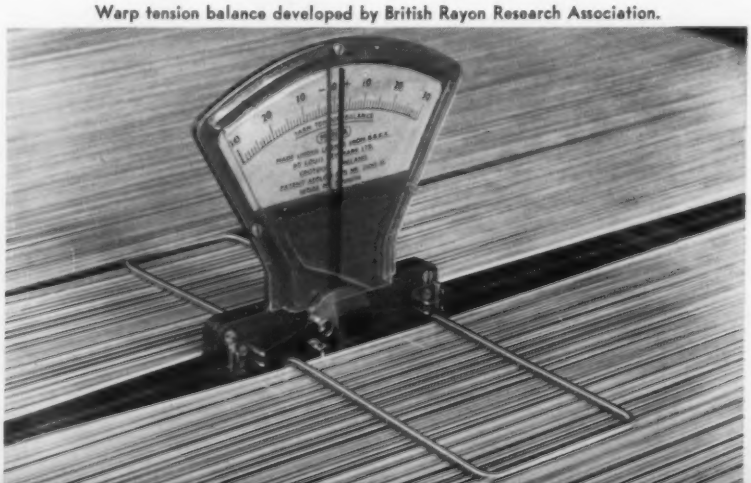
Another focus of attention at the *Davis & Furber* booth was the Model 95 synthetic sliver card, which produces sliver for high-pile knitting machines, and will handle synthetic fibers up to 3″ long.

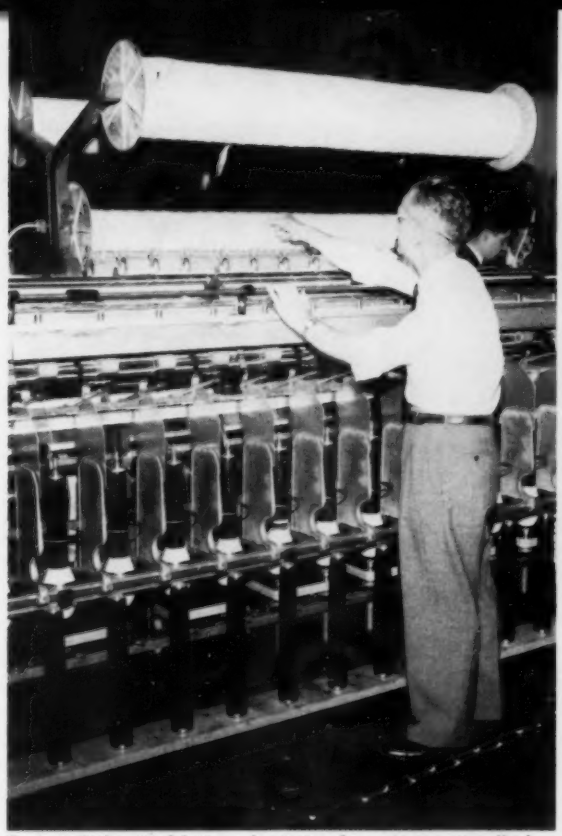
Roberts Co. signaled its entry into the field of long-fiber pinning and drawing with its line of Roberts-Tematex ParaDrafters, including an AutoEvener machine

Portable Micronaire by Sheffield.



Warp tension balance developed by British Rayon Research Association.





Davis & Furber Model H wool spinning frame is exceptionally low, has variable speed drive and an unusual device for controlling

tension between front rolls and traveler (above photo) called "Hy-Pro-Spin." Up to double yarn weight per doff is claimed.

which levels delivered sliver weight to within ± 1%, and a ParaBlender for intimate melange blending. The machines are made in Italy, with U. S.-made motors and accessories.

The worsted and synthetic version of the Gwaltney spinning frame, called the Model SJ, was shown for the first time by *Saco-Lowell Shops*. The frame can spin staples from 1½" to 9".

Automatic regulation of sliver weight is a result toward which many firms have directed their research efforts, as was obvious to even the most casual Show visitor. In addition to the AutoEvener mentioned above, and the Saco-Lowell/Uster drawing frame described on a previous page, these were to be seen at Atlantic City:

Warner & Swasey's Servo-Drafter intersecting draw frame, which can correct input variations of as much as ± 25% through a combination hydraulic-mechanical system.

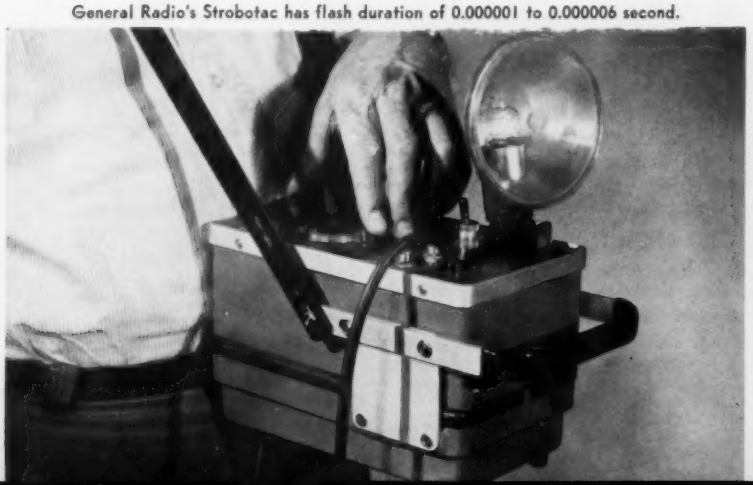
The Super Gill with Autoleveller, by *Holdsworth Mfg. Co.;* this English device was a pioneer development in the field of sliver evenness control.

The finisher intersecting gill of *N. Schlumberger & Cie.*, equipped with draft regulator, a purely mechanical type evener motion.

The HMG Auto-Gill of *Hanseatische Motoren-GmbH,* which uses an electro-hydraulic amplifier for adjusting draft.

The "Autocalibreur" gill of *La Duranitre S. A.*, which uses a fully mechanical sliver-evening device, and is the only one displayed

General Radio's Strobotac has flash duration of 0.000001 to 0.000006 second.



Forté electronic moisture content analyzer.

Models show garments knitted of Astralene-C textured polyester yarns in the Scragg booth. Model on left wears a sweater of 6/150-denier yarns; model in center shows a bulky cardigan of two-ply 4/150-denier; and model at the right wears a check of 150-denier singles.

which levels two slivers simultaneously.

The Perl French comb shown by *SACM* is claimed to be versatile enough to handle wool, synthetics, and blends of synthetics with either wool or cotton. At the Show it was combing garnetters' nylon waste (1½ and 3 denier) and 62s burry wool at 186 nips per min. The comb features web-tension adjustment without stopping machine, and automatic noil removal.

Testing and research

New testing and research equipment seems to be appearing at a rate which is increasing geometrically. These were some of the highlights at the ATME Show:

A Micronaire by *Sheffield Corp.* which will actually fit in a coat pocket—it measures 4" x 8" x 1½". It has its own air supply and can be used to check cotton fiber fineness in the field or anywhere that no lab is available.

The SKF Spintester, made by *SKF Kugellagerfabriken*, which is a 6-spindle ring frame taking fibers up to 5½" long. Spindle speed, draft, and twist can be progressively varied during spinning.

The electronic moisture content analyzer of *Forté Engineering Co.*, which measures the moisture content of large samples of entire packages (yarn cones, balls of top, etc.) in seconds. This is leased in conjunction with a complete moisture content measurement program.

Developments of the *British Rayon Research Association* which were exhibited included the Manra warp tension balance, a self-contained completely mechanical instrument for comparing the tensions in the sheds of loom warps during weaving. The Manra Vibrascope for instantaneous measurement of the denier of any fiber more than 3 cm long. The Manra Strainometer for continuous measurement of the elastic properties of filament yarns. The Manra Yarn Filament Counter, for automatically counting number of individual filaments in a yarn.

Hudson Automatic Machine & Tool Co. showed its Projectina (microscope with viewing screen) fitted with a Polaroid Land camera for making ready-in-a-minute pictures of fibers, yarns, and fabrics.

Two new electronic devices were demonstrated by *Scott Testers:* The new Model CRE Constant-Rate-of-Extension tester incorporates inertialess electronic weighing and upward moving crosshead, plus push-button controls. The Model IP-4 "Scotamatic," developed in England by Courtaulds Ltd., permits fully automatic and unattended yarn testing and recording. This machine is the well-known IP-4, with pneumatic and mechanical controls, and electronic digital computing devices built in.

The Qualitester by *Qualitex NV* is a yarn evenness tester claimed to correlate yarn test results with ultimate cloth appearance. The device shows two variation factors at the same time: over-all variation, and the severity of irregular variation. Neps and slubs of varying sizes are recorded independently.

General Radio Co.'s new Strobotac has its speed range extended upward to 25,000 rpm, direct reading, and is useful to about 250,000 rpm. The lower limit is 110 rpm, direct reading, less with external contactor.

For More Information
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Proceedings of the 1960

Cotton Research Clinic

Exclusive

Speakers on the opening day were (l to r): **Hugh Brown,** research consultant, Clemson, S. C.; **Laura Hall,** The Kendall Company, Paw Creek, N. C.; **John Tallant,** associate physicist, USDA Southern Regional Research Laboratory, New Orleans; **C. J. Craven,** professor, University of Tennessee, Knoxville; and **Lindsay Dexter,** assistant treasurer, Pepperell Manufacturing Company, Boston, Mass.

■ THE FULL TEXT of all papers presented at the eleventh annual Cotton Research Clinic, which was held at Asheville, N. C., May 31 - June 2, will be published exclusively in TEXTILE INDUSTRIES.

Four of the papers are presented in this issue (pages 99 through 117), and the remainder will be published in subsequent consecutive issues.

Upon completion of the series, the entire proceedings will be reprinted in booklet form, with reprints available free upon request from the National Cotton Council, sponsor of the Clinic, and TEXTILE INDUSTRIES.—The Editors.

Effect of fiber length on single fiber tensile and resilience properties

by L. Rebenfeld and Polly K. Way
Textile Research Institute

IT HAS BEEN amply demonstrated that cotton fiber length is an all-important fiber characteristic. Disregarding the economic implications of fiber length and considering only its technological significance, it is possible to list many instances where fiber length plays an important role.

The staple length must be carefully measured and accurately known, since machine settings in the many delicate cotton manufacturing operations are decided upon, to a large extent, on the basis of this fiber property. The influence of fiber length on the quality of yarns has also been indicated (1)[1]. In many cases an influence ascribed to fiber length is not directly due to the length of the fiber, but rather to some other fiber property which is associated with fiber length. This is a result of complex inter-relationships between fiber properties, which makes isolation of the influence of one particular fiber characteristic a very difficult task (9).

It is well known that in any cotton sample of a given mean fiber length there exists a distribution of lengths around the mean value. Such a distribution of lengths may arise from two broad sources: the normal variation in any natural product, and variations resulting from breakage of fibers during any of the preparatory processes to which the lint is subjected. During the past decade it has been shown that the shape of the fiber length distribution curve is possibly even more significant than the mean fiber length. Short fiber content appears to be particularly important as far

Summary

Single fibers from length groups above and below the mean length from several cotton types were examined and the dependence of fiber mechanical properties on fiber length are reported.

Fiber linear density decreases with fiber length while the fiber breaking tenacity and elastic modulus increase with fiber length.

The fiber breaking extension and toughness increase with length initially and subsequently decrease with increasing fiber length.

The fiber resilience characteristics were shown to be dependent upon fiber length for only one of the cottons studied.

[1]Numbers in parentheses designate references at the end of the paper.

TABLE 1.
General Characteristics of Experimental Cottons

	G. Barbadense—Coastland RN x ET	G. Hirsutum—Bobshaw 1A
Fibrograph Length		
UHM, in.	1.36	1.11
Mean, in.	1.17	0.98
Array Method		
Mean length, in.	1.20	1.00
CV, %	27	24
Fineness[1]	4.6	5.2
Maturity, %	86	90
Arealometer		
A value, mm^2/mm^3	406	384
D value, mm^2/mm^3	19	16
Stelometer		
T_0, g/grex	4.15	4.09
T_1, g/grex	2.44	2.00
E_1, %	8.8	6.9
Micronaire[1]	5.3	5.9

[1]Micrograms/inch

as the cotton's spinning performance is concerned.

Tallant, Fiori, and Legendre (8) have shown the effect of short fibers on processing efficiency and product quality by deliberately adding short fibers to a given cotton and observing its performance in mill trials. Their results indicated that increases in short fiber content are detrimental to virtually all yarn and fabric properties.

Wakeham (10) has shown in four actual case histories that a large number of short fibers in a cotton, regardless of their origin, causes poorer processing efficiency and lower end-product quality. Wakeham further pointed out the importance of a number-based length distribution rather than the usual weight-based distribution such as is obtained from the Suter-Webb array method. In a number-based distribution the short fibers are weighted equally with the long fibers and, therefore, the short-fiber region in a distribution curve is accentuated.

In view of the importance of the fiber length distribution, it was of interest to determine whether fiber mechanical properties differed significantly within a cotton sample after classification by fiber length. In a series of publications from the Southern Regional Research Laboratories, Grant, Morlier, and Orr (3, 6) have shown that fiber strength and extensibility within samples of American Upland and Sea Island cottons increase with fiber length. The ratio of breaking extension to breaking load was shown to decrease with fiber length. Hertel (4) has also showed the increase in fiber strength with increase in fiber length and has suggested the importance of a gauge-length-to-fiber-length ratio in terms of fiber breaking tenacity.

It is the purpose of this publication to report on a study of fiber properties as a function of fiber length within given types of cotton. In addition to fiber strength and extensibility, which have been reported previously (3, 6), the fiber resilience properties are also considered.

EXPERIMENTAL

Two experimental cottons, Coastland RN x ET *(G. Barbadense)* and Bobshaw 1A *(G. Hirsutum)* were used for the first portion of this study. Some pertinent fiber characteristics of these two cottons are shown in *Table 1.* Sub-samples of the two cottons were separated into several length groups by the Suter-Webb array method and single-fiber mechanical properties of fifty fibers from each length group for each cotton were evaluated on the Instron Tensile Tester. The fibers were tested at one-half-inch gauge length at a constant rate of extension of 10% per minute. The method of single fiber mounting and testing has been previously described (5, 11). All fiber tests were conducted under standard conditions of temperature and humidity (70 F, 65% RH). The experimental results are listed in *Table 2.*

In addition to the standard single fiber tests listed in *Table 2,* single fibers from three length groups were subjected to more intensive study of their resilience characteristics. In this test two other cottons were used in addition to those listed in *Table 1.* A Stoneville seed cotton was used as another example of a *G. Hirsu-*

TABLE 2. Single Fiber Properties in Several Length Groups for Two Experimental Cottons

Length Group (1/8")	Linear Density (grex)		Break Tenacity (g/grex)		Break Extension (%)		Toughness (g/grex)		Elastic Modulus (mg/cm^2)	
	Coastland RN x ET	Bobshaw 1A	Coastland RN x ET	Bobshaw 1A	Coastland RN x ET	Bobshaw 1A	Coastland RN x ET	Bobshaw 1A	Coastland RN x ET	Bobshaw 1A
—3	2.08	2.37	2.57	2.06	7.81	6.28	0.1009	0.0647	54.8	39.7
—2	2.14	2.24	2.62	2.08	9.15	6.22	0.1202	0.0650	53.7	45.6
—1	1.91	2.56	2.74	2.20	8.80	6.35	0.1209	0.0698	55.6	45.6
Mean	2.00	2.22	3.29	2.14	9.34	6.68	0.1537	0.0715	64.2	38.6
+1	1.95	2.10	3.49	2.50	9.92	7.22	0.1722	0.0900	60.5	42.1
+2	1.83	2.00	3.98	2.67	9.13	8.73	0.1820	0.1162	72.4	42.1
+3	1.79	1.89	3.94	2.88	8.96	8.04	0.1762	0.1156	82.8	51.5
+4	1.55	1.71	3.97	2.85	8.16	7.54	0.1623	0.1070	87.4	53.6
Pooled 95% Confidence Limits	0.15	0.18	0.43	0.35	0.89	0.84			8.9	5.6

tum cotton and a Sea Island variety as another example of a *G. Barbadense* cotton.

The fiber resilience properties were evaluated by a cyclic loading procedure, using the Instron Tensile Tester. Fifty fibers from each of the length groups considered for each of the four cottons were mounted at one-half-inch gauge length in the usual manner and stressed to a one-gram force level at a constant 10% per minute rate of extension. When the one-gram force level was attained, the crosshead of the Instron was immediately reversed and the fiber unloaded to a zero force level. A second loading cycle was begun with no relaxation period other than that afforded by the time required to make necessary adjustments on the Instron Tester. The second loading cycle was carried to the fiber rupture point.

From the first loading cycle the following fiber characteristics were evaluated: specimen test length, elastic modulus, and extensional resilience. The resilience was estimated by comparing the area under the loading portion of the stress-strain curve with the area under the unloading portion of the stress-strain curve, and thus conforms to the definition of resilience as the ratio of the energy of retraction to the energy of deformation (2)[2]. From the second loading cycle the specimen test length and elastic modulus were again evaluated.

The gain in the fiber length from the first to the second loading cycle may be considered as the fiber's permanent set under the test condition defined previously. The resilience characteristics of the fiber may also be estimated by comparing the elastic moduli from the two loading cycles. The ratio E_2/E_1 may then be used as an inverse index of the resilience characteristics. The results of these tests are summarized in *Table 3*.

The experimental data shown in *Tables 2* and *3* have been tabulated according to deviation from the mean fiber length for each cotton, rather than according to the actual fiber length.

RESULTS AND DISCUSSION

In *Figure 1* is shown the variation in fiber linear density as a function of fiber length. While there is considerable scatter in the data in the short fiber region, there is evident a statistically significant decrease in fiber linear density with an increase in fiber length. These data indicate that longer fibers within a given cotton are finer in much the same way that the longer staple cottons are generally found to be finer.

In *Figure 2* is shown the variation in fiber breaking tenacity as a function of fiber length. Fiber breaking tenacity remains essentially constant up to the mean length and then rises significantly (ca. 50%) to another leveling-off value.

The variation in fiber breaking extension with length is shown in *Figure 3*. Breaking extension, unlike breaking tenacity, is not a continually increasing function but passes through a maximum value.

[2]The areas under these two portions of the stress-strain curve were not actually measured; an estimate of these areas was made by an unidimensional measurement along the strain axis.

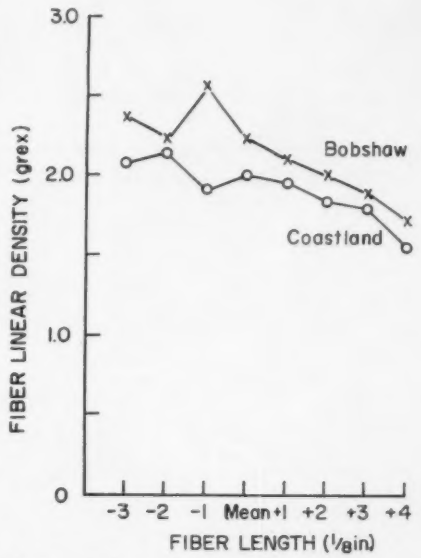

Figure 1. Dependence of fiber linear density on fiber length.

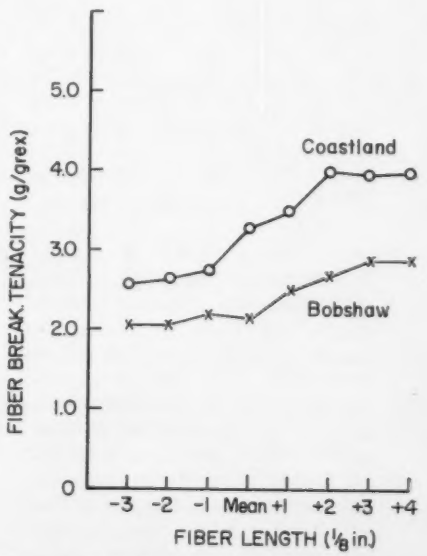

Figure 2. Dependence of fiber breaking tenacity on fiber length.

TABLE 3. Single Fiber Resilience Properties in Several Length Groups for Four Experimental Cottons

	G. Barbadense		G. Hirsutum	
	Coastland RN x ET	Sea Island	Bobshaw IA	Stoneville Seed
Resilience (%)*				
Mean —3/8"	45.6	59.1	54.3	47.1
Mean	57.0	56.2	51.4	45.5
Mean +4/8"	64.3	55.3	49.1	49.3
E_2/E_1, Ratio				
Mean —3/8"	1.46	1.35	1.35	1.40
Mean	1.25	1.34	1.31	1.42
Mean +4/8"	1.12	1.30	1.31	1.41
Permanent Set (%)				
Mean —3/8"	2.82	2.56	1.93	2.04
Mean	2.83	3.06	2.16	3.05
Mean +4/8"	1.70	2.84	2.82	2.53

*Pooled 95% confidence limit for resilience data is 3.7

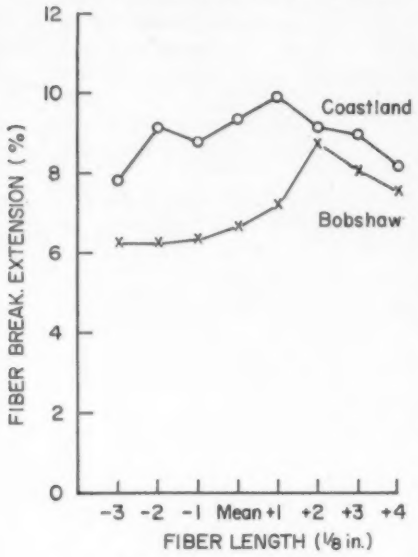

Figure 3. Dependence of fiber breaking extension on fiber length.

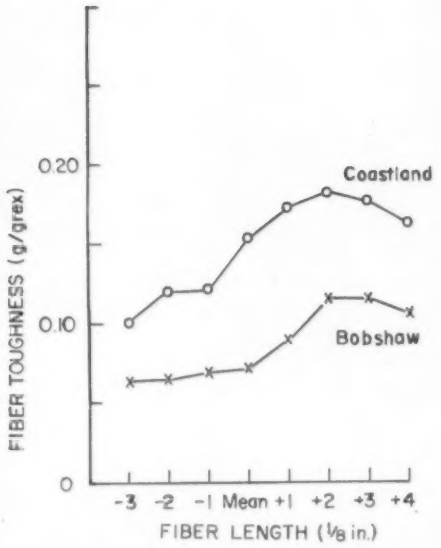

Figure 4. Dependence of fiber toughness on fiber length.

The maximum in fiber breaking extension takes place at approximately the mean fiber length for the *G. Barbadense* cotton but occurs well above the mean fiber length for the *G. Hirsutum* cotton. Grant et al (6) similarly observed a decrease in breaking extension for Sea Island and Egyptian Karnak cottons for the longest fibers tested, but did not observe such a maximum for American Upland cottons.

Fiber toughness, defined as one-half the product of fiber breaking extension and breaking tenacity, also varies with fiber length as shown in *Figure 4*. A maximum value is again observed for both cottons, this time occurring at the same length point above the mean fiber length.

The fiber properties discussed so far (fineness, strength, toughness, extensibility), although differing in magnitude for the two types of cotton, show the same dependence on fiber length. In *Figure 5* is shown the dependence of the fiber elastic modulus on fiber length. The elestic modulus or tensile stiffness which is taken from the initial portion of the fiber stress-strain curve known as the Hookean region, has been shown to be an important fiber characteristic (9). This fiber property is highly correlated with fibrillar orientation as estimated by the X-ray angle as well as other fiber properties such as strength and extensibility (7).

It is interesting to note from *Figure 5* that the *G. Barbadense* cotton exhibits a large (ca. 50%) increase in elastic modulus as a function of length, whereas the elastic modulus of the *G. Hirsutum* cotton studied here is not affected by fiber length. This result indicates that a difference might exist between these two species of cotton as far as the dependence of their resilience characteristics on fiber length is concerned.

As described in the experimental section of this paper, single fibers from three length groups were subjected to a more intensive study of their resilience properties. For this purpose fibers were tested from the mean length group and the length groups 3/8 in. shorter and 4/8 in. longer than the mean length. Four cottons, two from each of the species, were used in this portion of the research. The results of the cyclic loading test are shown in *Table 3*.

Examination of the data in *Table 3* indicates that only one of the four cottons exhibits a dependence upon fiber length as far as fiber resilience is concerned. The Coastland RN x ET cotton shows a statistically significant increase in extensional resilience, a decrease in the E_2/E_1 ratio, and a decrease

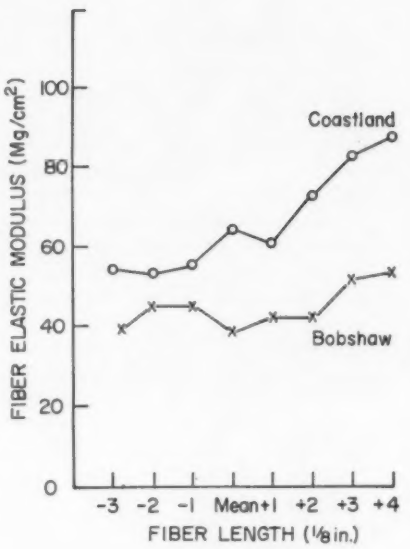

Figure 5. Dependence of fiber elastic modulus on fiber length.

in fiber permanent set with increase in fiber length. A fully resilient or elastic fiber would be expected to have zero permanent set, E_2/E_1 ratio of unity, and a 100% extensional resilience as defined previously.

The other three cottons used in this study do not show a dependence of fiber resilience characteristics on fiber length. It is, therefore, not possible to draw general conclusions regarding the effect of fiber length on fiber resilience properties. Apparently a dependence upon fiber length is not evident in all cases and one may consider that this is another example of the many differences among cottons.

Acknowledgments

The authors gratefully acknowledge the assistance of J. N. Sivertson and G. Furlong of Johnson & Johnson, who performed some of the separation into length groups by the Suter-Webb array method.

The work is part of the Textile Research Institute Cotton Research Project which is supported by the following member companies: The American Thread Co.; Coats & Clark, Inc.; Cone Mills Corp.; Fabric Research Laboratories, Inc.; Joanna Cotton Mills Co.; Johnson & Johnson; North Carolina State College School of Textiles; Pepperell Manufacturing Co.; Riegel Textile Corp.; Standard Chemical Products, Inc.; J. P. Stevens & Co., Inc.; and U. S. Testing Co.

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Span length as a fiber length criterion

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THE LENGTH property of the fibers in a fiber population is an important property to a textile material. The widely accepted usage of staple length and the substantial premiums paid for cotton based on staple length are evidence that a single length criterion can represent fairly well the effective length potential of a fiber population with its wide range of individual lengths. This indicates that the role of length is fundamental, simple, and universally applicable throughout textiles.

Length is a very basic quantity throughout the physical world, being merely the distance between two points. In the field of textiles, the long thin fiber capable of transmitting tension but not compression, torsion, or bending is the basic unit. Combining these two concepts, the importance of length in textiles depends upon the effectiveness of a textile in transmitting tension between two points. Stating it in terms of length, the effective length is that length which will be spanned or bridged by a given proportion of the fibers. It is the purpose of this paper to explore some phases of the concept of span length as it applies to textile structures and textile processing.

Textile Structures. A primary purpose of many textile structures is to resist tension as well as offer only slight resistance to compression, torsion, or bending stresses. Where the hand, drape, and similar characteristics are factors, however, the weak compression, torsion, and bending stresses are, of course, important. Workers have investigated the role of length in fibers for producing yarn strength (1, 2)[1]. In simple terms these analyses give the proportion of fibers that bridge or span the fracture zone, and hence transmit tension across the fracture zone, as a function of average fiber length and other pertinent physical properties. The proportion of fibers that will span the fracture zone or any given distance is readily obtained from the Fibrogram. Such a Fibrogram is shown in *Figure 1.*

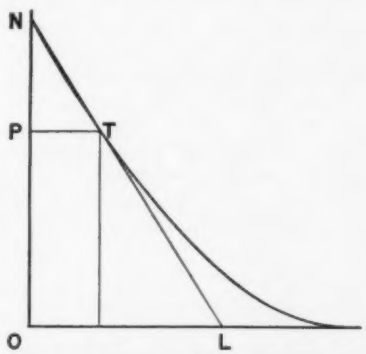

Figure 1. A Fibrogram. The length PT is the span length associated with the fraction PO/NO.

If the initial height NO of the Fibrogram in *Figure 1* represents the number of fibers in the cross section of a segment of roving, then the number of these fibers which would span a distance PT is represented by PO. PT is called the span length, corresponding to the fraction PO/NO. The proportion of the fibers in a cross section which span the distance PT may also be written:

$$\frac{PO}{NO} = \frac{NO - NP}{NO} = 1 - \frac{NP}{NO} = 1 - \frac{PT}{OL} \qquad (1)$$

from similar triangles. The distance OL represents a "secant mean" which, for small values of PT comparable to a fracture zone, would be only slightly larger than the mean length of the population given by the tangent. It is interesting to note that the above expression containing span length PT is similar to an expression derived by Sullivan (2) for yarn strength. Equation 5 in Sullivan's paper may be written:

$$\frac{F}{MT} = \left(1 - \frac{T}{LCSp}\right) \qquad (2)$$

where

F = strength of yarn
M = mass per unit length of yarn
T = tenacity of fibers
L = length of fibers
C = coefficient of friction
S = surface per unit mass of fibers
p = average pressure between fibers

It is apparent that span length PT in Equation 1 is equivalent to the cluster of parameters T/CSp in Equation 2 which control the extent of the fracture zone, i.e., the distance over which fibers may break when the yarn is broken. Sullivan proceeds to derive more sophisticated expressions to represent more precisely the complexities found in yarn, but the basic form is obvious and should not be obscured by the detailed mathematical refinements. Still other refinements are included by Gregory (1).

A key to yarn strength is the effectiveness of a fiber population in spanning the fracture zone or critical length. This critical length in turn depends upon the amount of twist, specific area, coefficient of friction, and other fiber properties. However, for a given set of fiber properties other than length, yarn strength depends upon the proportion of fibers that span the critical length. The ratio of the critical length to the average length determines the efficiency

[1]Numbers in parentheses designate references at the end of the paper.

with which a fiber population spans the fracture zone. Thus a span length and the average fiber length would seem to be the most meaningful length criteria for predicting yarn strength potentiality.

Textile Processing. Mills place emphasis upon length by paying premiums for extra length in cotton. The small increase in yarn strength as a result of increased fiber length alone would not seem to justify the premiums paid. Even though long cotton fibers are generally stronger than the short fibers from the same lot, the additional yarn strength resulting from additional length would still not seem to justify the premium paid. The justification for the premiums, at least in part, must arise from the improvement in processing behavior. We shall now examine some of the processes as they are affected by length in the fiber.

The objective of the mill is to start with a heterogeneous irregular mass of jumbled fibers and trash and organize the fibers into a uniform strand in which the fibers are subsequently straightened, paralleled, and twisted into a yarn. This must be done rapidly and with a minimum of fiber damage. The processing of literally trillions of fibers each week calls for genuine mass production methods.

A quick survey of what is going on in the industry reveals that the fibers are being moved from place to place and also being moved with respect to each other. Both movements involve the application of forces. A closer examination of the forces involved may indicate in what manner length is important. The first process following the maturing of the cotton is the picking of the seed cotton. Here force is applied to the locks by variously contrived spindles. The locks of seed cotton are then ginned by separating the seed from the lint. Again force is applied to the lint and an opposite force applied to the seed.

There are two successful commercial methods of ginning and here length of fiber is important. Long cottons are ginned on the roller gin, while the bulk of the crop is ginned on the more rapid saw gin. The essential difference is that in the roller gin the fibers are removed from the seed with little movement of the fibers among each other while the saw gin produces much more blending or fiber-to-fiber movement. The fibers are baled and distributed to mills as easily with one fiber length as another since there is no fiber-to-fiber movement.

In the mill, bales are opened in lots of twenty to one hundred and the blending process begins. Large aggregates of fibers or parts of the bales are intermingled and separated into smaller tufts by various mechanical devices in the opening and picker room. The tufts are mixed and formed into a lap or sheet of approximately constant cross section. The processing thus far consists of moving large aggregates of fibers by means of hooks or bars varying in size from a man's arm to small pins in a beater. Although there is much movement of fiber, there is relatively little movement of fibers with respect to their neighbors. There is, however, movement among fibers at the periphery of fiber aggregates or tufts. The proportion of peripheral fibers becomes larger as the tufts become smaller, and hence the length characteristic seems to become more important as the tufts become smaller.

In the carding process the fiber tufts are finally pulverized into individual fibers which can then be moved with respect to one another, straightened, and paralleled. The hook in the form of a licker-in tooth or card wire is still the dominant tool for contracting the fiber. The fibers have now all become peripheral fibers and length is most important.

Forces Acting on Fibers. It will now be useful to inquire about some of the fundamental principles involved in processing in order that the complex situation may be simplified. As indicated previously, fibers must be moved with respect to other fibers and, therefore, forces must be applied. Since the fibers are very long and thin, it will be helpful to classify the forces or force components into two groups, such as longitudinal and transverse forces. The forces of tension and compression may be termed longitudinal forces directed along the axis of the fiber, whereas the forces at right angles to the fiber may be termed the transverse forces.

The behavior of a fiber depends upon the direction as well as the magnitude of the force. Tensive longitudinal forces tend to straighten and orient the fiber in the direction of the forces, while compressive longitudinal forces tend to buckle and orient the fiber at right angles to the direction of the forces. Tensive longitudinal forces tend to straighten and parallel the fibers in a unique direction, whereas compressive longitudinal forces tend to mat the fibers into a compressed, two-dimensional tangled mass. For example, on the leading side of a comb the fibers are compressed, buckled, and matted, whereas on the following side the fibers are straightened and paralleled. The tensive forces must not be too great or breakage occurs.

The transverse forces are compressive forces except for possible weak electrical forces. Fiber orientation is at right angles to the direction of the force or along the contour of the pushing body. Further reflection reveals that even though tensive longitudinal forces are the desirable orienting forces, they are not produced directly. They are the result of combining transverse forces with relative motion and friction.

In *Fig. 2*, if A, B, and C are

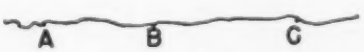

Figure 2. A fiber subjected to tensive and compressive longitudinal forces.

pressing against fibers with B moving toward C, surface friction at B brings about a tensive longitudinal force in AB and compressive force in BC. Straightening and parallelization take place in AB while buckling and "perpendicularization" tend to take place in BC. The action in AB is desirable while that in BC is disadvantageous. The condition of the fiber spanning AB is improved while the fiber spanning BC is made worse.

For best operation, mill settings and procedures are adjusted to maintain as large a fraction of fiber under longitudinal tension and

as small a fraction under longitudinal compression as possible. It would seem, therefore, that the important length measurement in processing as in yarn structure is span length, i.e., the length which a given fraction of the fibers in a cross section will span. In the case of the drafting roll spacing the fraction of spanning fibers must be small, while in yarn strength the fraction spanning the fracture zone must be large. Each is, however, a type of span length.

It appears that resistance to tensive forces is important in both textile structures and in textile processing. A closer examination of these forces is now desirable. As pointed out previously, there is no effective way of directly producing tension in a fiber. Transverse forces applied to the fiber combined with friction are needed to produce longitudinal forces. The transverse force may be produced in one of two ways: Either the fiber is gripped between two surfaces, or some tension in a curved portion has a lateral component pressing it against an object or another fiber.

Mill processing, including mechanical picking, ginning, opening, and carding relies primarily on the curved fiber and hook, whereas the drawing process appears to apply opposing forces to the fiber by means of the drafting rolls. It is well known, however, that perfectly straight fibers cannot be drafted and hence, even here, the lateral forces are largely due to components of tension in curved fibers. The relatively weak bending and torsional forces provide lateral forces which, combined with friction and motion, give the initial tension so important in fiber control.

Crimp is essential in mill processes. As crimp and entanglement are decreased in the final stages of drafting, the random crimp of such fibers is replaced by the controlled curvature of the fiber helix in the sliver or yarn and the bend in the yarn of the woven fabric.

The Drafting Process. A primary object of the drafting process is the straightening and reorienting of the fibers into parallel relationship. In *Figure 3*, R is the slowly moving roll with fiber A moving

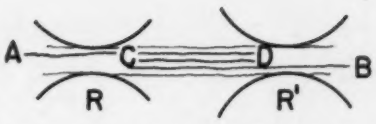

Figure 3. In the drafting process, a floating fiber CD may be subjected to either tensive or compressive longitudinal forces.

slowly and B moving fast. The free or floating fiber CD is in tension if end C tends to move with A and end D tends to move with B. When both ends are associated with either the slowly moving fiber A or the fast moving fiber B, there is neither tension nor compression in CD. When, however, end C tends to move with the fast fibers and end D with the slow fibers, CD is in compression. Compression causes buckling and rough yarn and is to be kept to a minimum.

In the drafting process, compressive and tensive longitudinal forces are both important. Neither can be produced by contacting a fiber at a single point. A pair of points are necessary and the fiber must span the distance between the points to be affected. If, then, the distance that a given fraction of the fibers in a roving cross section will span is a fundamental length concept, our thinking will be clarified by using span length measurements.

Suggested Span Lengths. A length which only 2 or 3 per cent of the fibers in a roving cross section would span appears to be more closely related to staple length than is the upper half mean. When the 3 per cent span length was measured for 94 staple-type bales, the correlation coefficient between these values and staple length was 0.987. It may be that the length which the classer is estimating is fundamentally a span length. This is the important length which governs minimum roll settings if fiber breakage is to be avoided.

For good textile structural performance, the fraction of fibers spanning the fracture zone should be large, hence the length that about two-thirds of the fibers in a roving cross section would span might be another good criterion. As is shown in the appendix, the particular value of 67 per cent happens to lend itself to a rapid and convenient measurement method.

Another advantage of a span length corresponding to a fraction in the neighborhood of two-thirds is that it is very highly correlated with average length (a coefficient of 0.992 was obtained on a group of 64 cottons). This high correlation would be expected from the fact that the Fibrogram and its tangent are so nearly coincident in the short fiber region. The correlation with average length is important in view of the fact that Gregory (1) and Sullivan (2) found average length on a number basis to be of fundamental significance in yarn strength.

Illustration. In order to see more clearly the meaning of these several span lengths, it may be helpful to examine the case of an ideal fiber population in which all of the fibers are 0.75 inches long. In this case the 2.5 per cent span length is 0.73 inches (see *Figure 4*) and

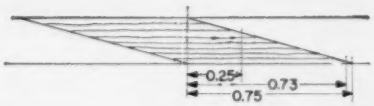

Figure 4. An illustration of the way the Fibrograph would array an ideal fiber population in which all the fibers are 0.75 inch long. The 2.5 per cent span length is 0.73 inch and the 67 per cent span length is 0.25 inch.

the 67 per cent span length is 0.25. The machinery in the mill would be set the same as for a cotton of 0.73 inch staple length.

When the finished yarn is given a twist such that the fracture zone is 0.25 inch, two-thirds of the fibers in the cross section will break upon yarn rupture. The yarn strength will be the same as any yarn in which two-thirds of the fibers rupture, providing other conditions are equivalent. Although specific values have been given to make the illustration concrete, these values can only be approximations to the true optimum values that prevail in any mill.

Span Length and the Fibrogram. The Fibrogram is basically a representation of the various span lengths in a fiber population. The

ordinate to a point on the Fibrogram gives the relative number of fibers spanning the distance represented by the abscissa of that point.

For other properties of the Fibrogram see the appendix.

Conclusions. Length of fibers is important in the textile industry for two different reasons. In disentangling, orienting, and straightening the fibers starting from the raw state it is important to know the shortest distance to which the machines can be adjusted so that few if any fibers are broken. The staple length or the distance that only 2.5 per cent of the fibers in a roving cross section will span would seem to be a good criterion.

When, however, one is interested in product strength, one must ask how effectively the fibers bridge or span the fracture zone. This is determined primarily by the average length of the fibers or equally well by the length that a large percentage, such as 67 per cent, of the fibers span. In both cases the length is a distance the fibers will span or bridge. In the first case is that distance which only a small fraction will span to prevent breakage, whereas in the second case it is that length which about two-thirds of the fibers will span and will contribute their ultimate or breaking strength.

There are, therefore, two important span lengths needed to characterize the length potential of fiber population; although these lengths can be expressed in terms of other lengths now being reported, it would seem to simplify length considerations to make fiber length measurements directly in terms of span length. The two span lengths recommended are the 2.5 per cent span length and the 67 per cent span length.

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Appendix

The Fibrogram is a type of fiber length distribution curve that represents the paralleled fibers in their normally random position in sliver or yarn, and hence contains an element of realism that provides a close correspondence between the geometry of the Fibrogram and the physical reality of the sliver or yarn.

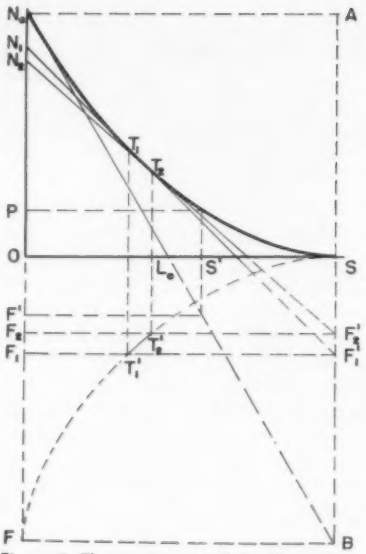


Figure 5. The upper part of the figure is a Fibrogram representing a portion of a sliver with paralleled fibers running horizontally and clamped along N_0O. The lower part illustrates certain geometric properties of the Fibrogram associated with spinning and floating fibers.

The upper part of *Figure 5* represents a portion of a sliver with paralleled fibers running horizontally and clamped along N_0O. The ordinate to the curve $N_0T_1T_2S$ represents the relative number of clamped fibers that extend to the right of N_0O a distance represented by the abscissa.

Let $n = N_0O$, the number of fibers in the cross section of the sliver;

$s = OS$, the length of a segment of the sliver;

$L = OL_e$, the average length of the fibers in the population;

p = the number of fibers spanning OS;

f = number of floating fibers having both ends between N_0O and AS;

N = total number of fibers in segment counting fractional fibers as fractions.

Then n/L = number of fibers per unit length of sliver segment, and $sn/L = N$ = total fibers in segment. Hence:

$$\frac{N}{s} = \frac{n}{L} \qquad \text{(A-1)}$$

showing that the extension of tangent N_0L_e intersects AB to give (by similar triangles)

$$N_0F = N. \qquad \text{(A-2)}$$

In the drafting process N_0O may be considered the nip of one pair of drafting rolls and AS the nip of the other pair. Fibers extending across N_0O as well as those crossing AS are "controlled" fibers. Fibers with both ends between N_0O and AS are "floating" fibers. If the second pair of rolls was at S', there would be $p = PO$ spanning fibers that had neither end within the segment.

Since each fiber has two ends, the total number of ends between N_0O and AS is:

$$2N = \frac{2sn}{L} = 2(n-p) + 2f \qquad \text{(A-3)}$$

$$\frac{f}{n} = \frac{s}{L} - 1 + \frac{p}{n} \qquad \text{(A-4)}$$

$\frac{f}{n} = \frac{s}{L} - 1$ for OS greater than longest fiber

$\frac{f}{n} = \frac{s}{L} - 0.975$ for $p/n = .025$ (2.5%)

The ratio L/s is similar to the ratio L/(Upper Half Mean) which has been used as an empirical length uniformity index. It is interesting to note that the reciprocal of the index L/s is related to the fraction of "floating" fibers f/n for a roll spacing equal to the longest fiber as follows:

$$U = \text{Length Uniformity Index} = \frac{1}{V}$$

and

$$V - 1 = \frac{f}{n} = \text{fraction of "floating" fibers}$$

The Fibrogram with appropriate tangents extended to intersect the line AB provides much geometrical information regarding "controlled" and "floating" fibers. For simplicity in the following discussion, OS is first considered to be not shorter than the longest fiber in the population.

It will be remembered that the tangent N_1T_1 gives N_1N_0 as the number of clamped fibers that are shorter than T_1F_1 and, since the clamped fibers represent a length-biased sample of the population, N_1N_0 is also proportional to the total length of fibers in the original population shorter than $T_1'F_1$. Similarly BF_1' represents the number of fibers shorter than $T_1'F_1$ that have both ends within OS, that is, the "floating" fibers.

A fiber with length F_1T_1' will "float" a distance $T_1'F_1'$, hence the area $F_1'T_1'T_2'F_2'$ represents the product of the number of fibers longer than F_1T_1' and shorter than F_2T_2' multiplied by the distance they "float." The area, therefore, might represent the potential difficulty that might be expected from these fibers in drafting.

On this basis it is seen that the fibers shorter than F_1T_1' should create more potential difficulty in drafting than those fibers longer since the area $T_1'F_1'BF$ is much greater than the area $T_1'F_1'S$. The dashed curve $FT_1'T_2'S$ represents a boundary for such areas. In general, actual Fibrograms have much less curvature than the one in the figure, and hence the division of areas may be quite different.

If the sliver segment is shortened to OS' in *Figure 5*, the fraction of fibers in the cross section that span OS' is given by $p/n = PO/N_0O$. The fraction of floating fibers based on the number in a cross section is given by $f/n = PF'/N_0O$. Another way to express the floating fraction is on the basis of N, the total number of fibers in the section. When put this

way, the floating fraction becomes

$$\frac{f}{N} = \frac{fL}{sn} = 1 - \frac{L}{s} + \frac{p}{n} \cdot \frac{L}{s}$$

In *Figure 5*, f/N is given by PF'/N_oF'.

The object of the above discussion has not been to develop any particular theory about the drafting process, but to consider the fundamental role which fiber length plays. Many other factors such as the effect of draft on sliver cross section have not been considered. The purpose has been to indicate how the concept of span length might serve as a simplifying and unifying principle which would help in understanding the role of length throughout the entire textile industry. This would help the cotton producer who is interested in breeding and producing cottons which can better serve the industry.

Unfortunately, the number of fibers in a Fibrograph specimen cross section at the actual clamping position is not easily determined. What is done, however, is to measure the number of fibers 0.15 inch from the clamp line. If this is then considered to be 100 per cent, the distance from the clamp line to the point at which there are still 2.5 per cent of the fibers is the 2.5 per cent span length. This is the length which very closely approximates staple length. The distance from the clamp line to the point at which there are still 67 per cent of the fibers is the 67 per cent span length.

It is easily shown that the secant through the 100 per cent point and the 67 per cent point intercepts the length axis to give $L = 3(s - 0.1)$ where L is the secant average length and s is the 67 per cent span length. The digital Fibrograph can either give s directly or, for this special case, by using a three-to-one gear ratio and an initial reading of 0.1 inch, it can give L directly.

Appraisal of the Digital Fibrograph and Fibrosampler from the mill viewpoint

by Laura T. Hall
Textile Division
Research Laboratories
The Kendall Co.

THE DISTRIBUTION of fiber length is a basic property of cotton, upon which mill performance and product quality are critically dependent. The length distribution inherent to a particular variety of cotton is of importance itself. The changes in this length distribution which occur as a consequence of fiber breakage in cleaning operations reduce spinning quality. Mechanical harvesting associated with elaborate cleaning operations at the gin together with requirements for higher production rates and lower costs at both gin and mill have made fiber breakage a matter of utmost concern to the industry today.

Even severe fiber breakage has only minor influence on staple length but a major effect on per cent short fibers. Since mill operation depends on both, breakage upsets the traditional association between staple and spinning value. The consequence is that with appreciable breakage a single measure of fiber length is not an adequate criterion.

Insofar as spinning is concerned it is immaterial whether fiber breakage takes place during ginning, or in the mill processes prior to spinning, or both.

Staple length depends substantially on the nature of the long end of the fiber distribution, and, being a subjective measure, is influenced by other parameters to unknown and varying degrees. Length distribution has been measured by a number of instrument techniques, one of the earliest being the array method. This technique is slow and tedious and it is to be expected that other, quicker ways would be sought. Dr. Hertel developed the Fibrograph over twenty years ago for just this purpose. The Fibrograph was a major step forward; it still was not, however, the answer to the quick and useful fiber length distribution information needed by the mills. In the next fifteen years modifications and improvements were made which are embodied in the now familiar Servo instrument.

The growing importance of length distribution has been of concern to many people and has culminated in a number of efforts to devise better and quicker methods. The one which has shown greatest progress is the development of the Digital Fibrograph.

With a background of experience with the Servo instrument we had a normal interest in the new Digital Fibrograph. This interest was heightened when shortly later the Fibrosampler was made available.

Our objectives in working with the Digital Fibrograph-Fibrosampler combination were:

1) To ascertain to what extent the limitations of the Servo instrument might be eliminated or minimized.

2) To appraise and compare the Digital-Fibrosampler results with those obtained with the Servo hand-combing and the Suter-Webb Sorter array techniques for precision, accuracy, and reproducibility.

This appraisal is restricted to the staples and grades of interest to Kendall, for the most part 1 1/32" and 1 1/16" Low Middling to Middling grades.

DESCRIPTION OF METHODS

Suter-Webb Sorter Array. Any number of length parameters may be derived from the complete distribution information provided by the array method. The ones usually used are the upper quartile, the mean or average length, and the coefficient of variation of length. Percentages of fibers shorter than or longer than any specified length may be determined.

Servo Fibrograph. One advantage of the Servo instrument is that a permanent fibrogram is drawn from which several length parameters may be derived. The information available is not as de-

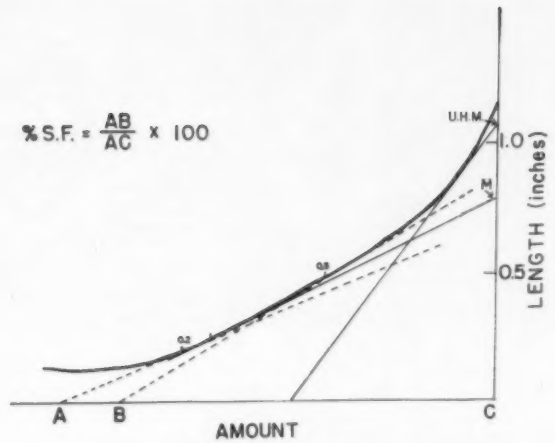


Figure 1. Servo Fibrograph method for short fiber content.

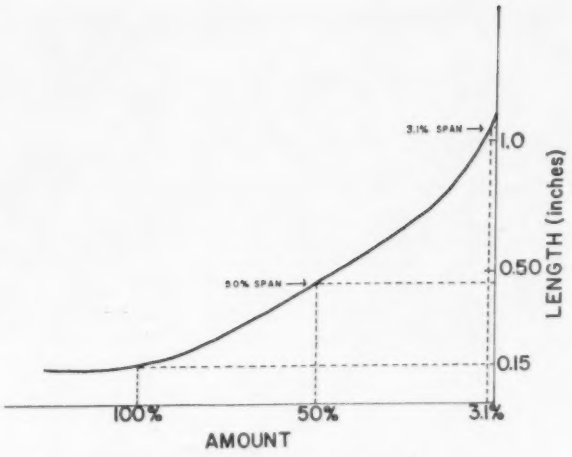


Figure 2. Digital Fibrograph span lengths.

tailed as that from the array. In our work four quantities have been used: the upper half mean, the mean, the lower half mean, and the percentage of short fibers. Of these the upper half mean and per cent short fibers were found to be most meaningful.

The method for determining short fiber content from the Servo fibrograms was suggested by the Special Instrument Laboratories (1)[1] and is illustrated in *Figure* 1. We have chosen the proportion of fibers 1/2″ and shorter, expressed as a percentage of the whole, as a measure of short fiber content.

One tangent is drawn to the curve at 0.2″ from the base line and another at 0.5″. These tangents intersect the base line at the points A and B. The per cent short fibers is given by:

$$AB/AC \times 100$$

Drawing of tangents to the fibrogram is at best a slow and meticulous job. When the percentage of short fibers is small, as in the case of good cotton, the points A and B are very close together. Measurement of this distance is difficult and loses precision. When the percentage of short fibers is very high, approaching that of card waste, extreme curvature of the fibrogram makes location of the tangents difficult. Most commercial cottons today fall between these extremes and measurements are sufficiently reproducible to provide useful information.

There are three difficulties which were found to limit seriously the practical use of the Servo technique.

1. Continuing difficulty in training operators to comb samples so that the short fibers were not removed, or the long fibers broken; and the problem of maintaining the technique constant.

2. The necessity of using a skilled technician for tangent drawing; preferably one who does no combing so that the combing technique is not influenced by the difficulties sometime encountered in tangent drawing.

3. The time required for the beard preparation and tangent drawing operations.

Digital Fibrograph and Fibrosampler (DFS). The Fibrosampler is a device which rapidly prepares beards for use on the Digital Fibrograph and eliminates most of the personal element of hand combing. A portion of a classer's sample is used. It is important that the surface of the sample be representative of the bulk of fibers, and it is essential that a "fresh face" be presented to the comb each time a beard is prepared. The previous handling of the sample is therefore important.

The Digital instrument can be thought of as the basic Fibrograph changed to read-out length and amount of fiber on counters. This read-out feature eliminates the drawing of tangents and the associated measurements. The Digital instrument positions the beard automatically at preset locations. Several length coordinates have been studied in this appraisal; the two which will be discussed are the 50% and 3.1% span lengths.

When the Digital instrument is operated continuously by the use of the potentiometer and the counter readings of amount and length are plotted, a fibrogram is obtained just as with the Servo. *Figure* 2 shows a fibrogram obtained by this technique and illustrates how the 50% and 3.1% span lengths are derived.

The short fiber content is derived from Digital data in a manner quite analogous to that used with the Servo fibrogram. *Figure* 3 shows the geometry involved.

Two push buttons are provided which position the beard under the scanning head at 0.45″ and 0.55″; a "tangent" is computed from the Digital data to pass through these two points and the percentage of short fibers is given by:

$$\frac{A_0 - i}{A_0} \times 100$$

The coordinate of the point i along the amount axis is derived, by noting first that the slope S of the "tangent" is

$$S = \frac{A_1 - A_2}{L_1 - L_2} = \frac{i - i'}{L_{START}}$$

and, also from the geometry we may write:

$$A_1 = i' + SL_1$$
$$A_2 = i' + SL_2$$

[1]Numbers in parentheses designate references at the end of the paper.

Solving for i one obtains

$$i = \tfrac{1}{2}[(A_1 + A_2) - S(L_1 + L_2)] + SL_{START}$$

When the particular values of $L_{START} = 0.15''$, $L^1 = 0.45''$ and $L^2 = 0.55''$ are substituted, with due regard for algebraic signs, the above simplifies immediately to

$$i = \tfrac{1}{2}(A_1 + A_2 + S) - 0.15\,S$$

where $S = 10(A_1 - A_2)$

This is substituted in the equation for per cent short fibers. Calculation of numerical results is simple.

In order to make measurements for short fibers the instrument must be set to begin scanning the beard as close to the combs as possible. Various carriage settings were explored.

When the starting length was as close as 0.125" (1/8" starting length of the Servo) and a Fibrosampler beard of satisfactory weight for measuring the longer fibers was used, the bulk of very short fibers close to the comb was so heavy that insufficient light was transmitted to the instrument.

Conversely, if the beard was made light enough to so reduce the bulk of the fibers close to the comb that adequate light was transmitted, the total amount of fibers was so reduced that the creation of a satisfactory beard was difficult if not impossible.

Starting lengths as much as ¼" from the combs were explored, in which cases it was immediately observed that information on short fiber content was lost. The 0.15" starting point is the closest length where we can get good short fiber information and at the same time prepare satisfactory beards.

For an instrument to be of value to a mill it must have the potential of keeping up with production. It takes about ½ minute to prepare two combs on the sampler and examine them for uniformity. It requires an additional ¾ minute to transfer the combs to the Digital instrument, obtain the 3.1% and 50% lengths and check the zero point. If the short fiber content is desired the operation of the Digital instrument is 1 1/3 minutes. The calculation time for the per cent short fibers is about 1 minute. The total time to do all the operations is 2.5 to 3.0 minutes per sample.

With all the attendant inefficiencies when using a single operator, such as procuring her own samples and changing from the testing to the computing routine, a single operator can, nevertheless, turn out a hundred complete tests in a normal working day (better than 70% efficiency).

The longest unit time involved is the 1 1/3 minutes for the operation of the Digital instrument to obtain all information. The 100% potential of the Digital Fibrograph to get all the information is seen to be about 360 tests per day. This increases to 640 for just the 3.1% and 50% span lengths. Obviously using several technicians, each doing appropriate parts of the work, the actual daily out-turn reaches very practical levels.

There are, however, some disadvantages in the use of the Digital Fibrograph:

1) The feature of providing a permanent graphical record representing the entire length distribution has been lost. Data from two or more laboratories can be compared only where the starting and span lengths are the same.

2) The calibration and standardization of the instrument is more difficult than for the Servo. Complete calibration and standardization of the Digital instrument is, however, readily accomplished after a little experience. The daily checking requires only about ten minutes.

The Fibrosampler technique is much easier to master than hand combing, particularly when the per cent short fibers is involved. The reproducibility of results with the DFS combination is the same as with the Servo for experienced operators. It is only necessary with the sampler to use "check cottons" in training new operators or after readjustment of the instrument.

COMPARISON OF RESULTS

Suter-Webb Sorter Array vs Digital Fibrosampler. A limited amount of data suffice to show a good correlation of DFS 3.1% span length and upper quartile from fiber array. This is seen in *Figure 4*. The correlation coefficient for the data is 0.98, with a standard error of 0.02". The 3.1% span length is about 0.10" less than the upper quartile length in the nar-

Figure 3. Digital Fibrograph method for short fiber content.

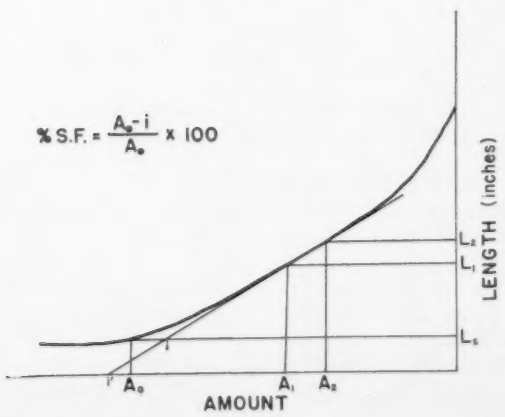
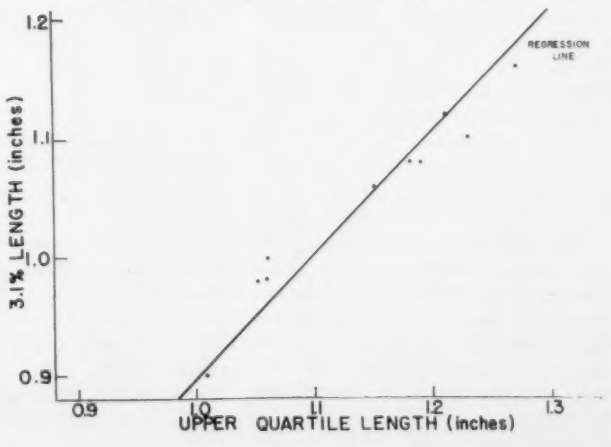


Figure 4. Array vs Digital Fibrograph; 3.1% vs UQ length.



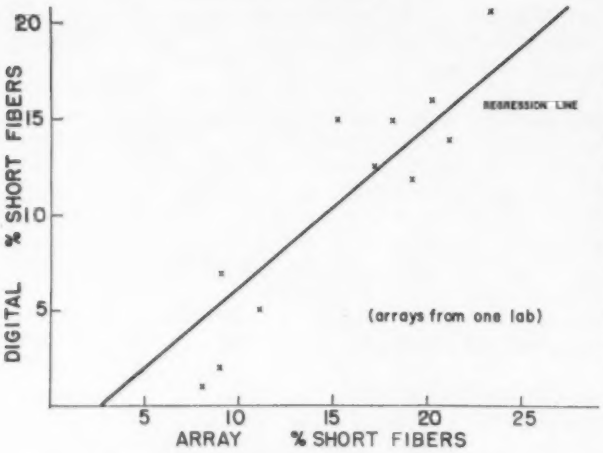


Figure 5. Array vs Digital Fibrograph, per cent short fibers.

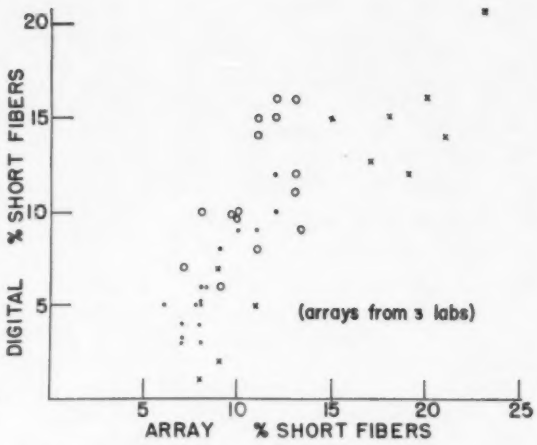


Figure 6. Array vs DFS, per cent short fibers, arrays from 3 labs.

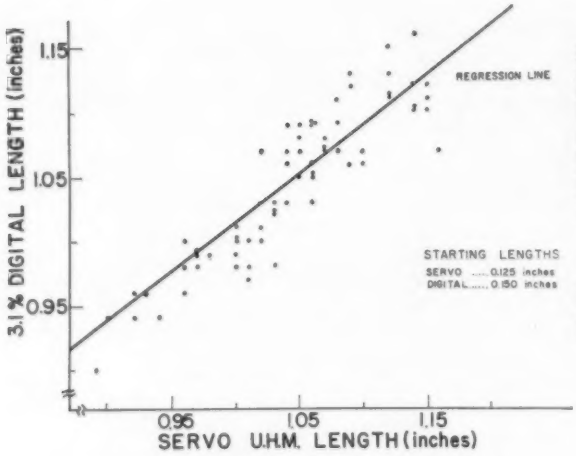


Figure 7. DFS 3.1% span length vs Servo UHM length.

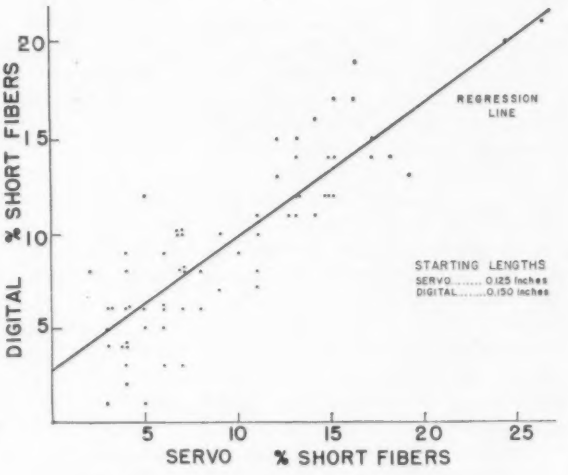


Figure 8. DFS vs Servo, per cent short fibers.

row range studied.

There is excellent correlation between the short fibers measured by the array and the DFS techniques as shown in *Figure 5*. The correlation coefficient is 0.94 with a standard error of 2.3% short fibers. *Figure 6* illustrates the differences in level of per cent short fibers between arrays made by three laboratories compared to DFS results from one operator; each point is a different cotton. For each laboratory there appears to be a different slope. Even with the three laboratories the coefficient of correlation is nevertheless very good, i.e., 0.80. Using this as more representative data than that shown in *Figure 5*, it is seen that the per cent short fibers by the DFS technique is roughly 5% less than by the array technique.

From the foregoing data the conclusion is reached that the DFS technique measures parameters of length that, with only an adjustment of magnitude, are the same as those obtained by the array method.

Servo Hand Combing vs Digital Fibrosampler Results. The 3.1% span length was chosen by Dr. Hertel as one of the length coordinates for the Digital Fibrograph because it gave a good correlation with the Servo upper half mean length and was numerically very close to the upper half mean of the Servo over a wide staple range. Without further investigation we used the 3.1% span as one of the parameters for the DFS combination.

The high correlation between the DFS 3.1% span length and the Servo upper half mean is shown in *Figure 7*. The correlation coefficient is 0.88, with a standard error of 0.03".

The correlation between the short fiber results by the two techniques is shown in *Figure 8*. The correlation coefficient is high, 0.86, with a standard error of 2.4% short fibers.

We conclude that, in the staple range studied, the DFS 3.1% span length is the same as the upper half mean from the Servo for all practical purposes. These two terms are used interchangeably in the next portion of this report. The per cent short fibers by the two

techniques is considered the same.

INTERPRETATION OF RESULTS

Inferences. We do not have DFS results on cottons of ten or fifteen years ago but it may be inferred that the per cent short fibers would have been very low, 5% or less, and that the upper half mean range for a single staple would have been fairly narrow.

1. The data which we have on Government Standard Staple Types throughout a period of fifteen years indicate that these types were picked to have low percentages of short fibers and it is assumed were representative of normally good commercial cottons.

2. Historically, the majority of Middling 1 1/32" and 1 1/16" staple cottons were associated with good character. Going back through our records of Suter-Webb Sorter arrays, and using the regression previously shown, we find that the good commercial cottons ranged from about 1% to 9% DFS short fibers, with an average of 4%.

3. From USDA data of 1948 (2) it is observed that for a single staple the range in upper half mean was fairly narrow, i.e., about 0.10".

Since the per cent short fibers for good character cottons were low and the upper half mean length range narrow, a single parameter of length sufficed to describe the criterion of spinnability associated with length some years ago.

With commercial cottons of today, for a single staple length the percentage of short fibers ranges from very low to high and the range in upper half mean length is nearly twice that of a few years ago. Because of these greater ranges a single parameter no longer adequately describes the length distribution for spinning value.

We have found that the 3.1% span length and the per cent short fibers are most useful instrument length parameters in evaluating spinnability. The choice of the parameters was based on cottons selected by our cotton buying office and on the mill performance of carefully selected bales.

There appears to be little or no question that the short fiber content is one of the factors of quality which the classer calls character. It is difficult however, to detect small differences in short fiber content by a subjective procedure. Our cotton buying office selected cottons for us giving meticulous attention to character; the Fibrograph results are shown in *Figure 9.*

The cottons which they described as desirable have, without exception, low percentages of short fibers, i.e., about 5%. They also fall in a narrow upper half mean range. In other words they have the same type of fiber length distribution found in good cottons some years ago.

The undesirable cottons cover a much wider range in upper half mean lengths and of short fiber content. The majority have at least 15% or more short fibers. These are cottons which, because of fiber breakage, no longer fit into the old established pattern of staple with mill performance.

Cottons of 1 1/32" and 1 1/16" staple which have more than 10% short fibers do not process well in our mills. The Fibrograph results of some mill-tested cottons are shown in *Figure 10.*

For the Kendall tests the paired lots were the same in grade and staple and carefully matched for strength and fineness. The measurable differences were those of fiber length distribution.

The poor processing cotton in test 1, which had 12% short fibers in the bale, had nearly three times as many ends down in spinning as the good lot. The yarn strength was off about 20% and the yarn uniformity about 12%.

In the test, marked 2, the cottons had the same upper half mean values. The cotton with 16% short fibers was so bad that it was finally taken out of production before the test was completed.

Results of the Joanna test cottons have already been published (3); only the extremes in processing are shown here.

For the Kendall cottons, as in the Joanna, the poor processing cottons not only had a high percentage of short fibers in the bale but excessive breakage occurred throughout processing. This was shown by an increase, or lack of decrease, in short fibers as processing proceeded. The good cottons

Figure 9. Classer's selection of cottons.

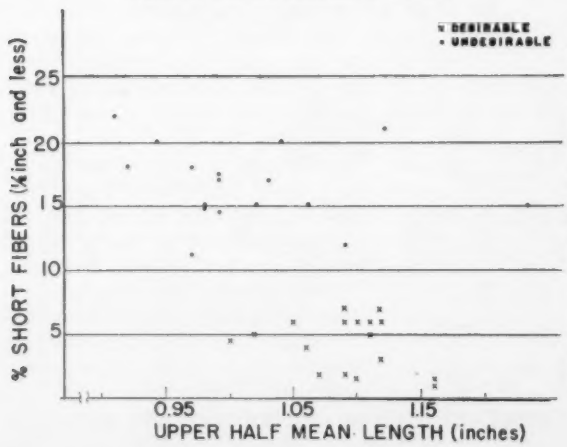
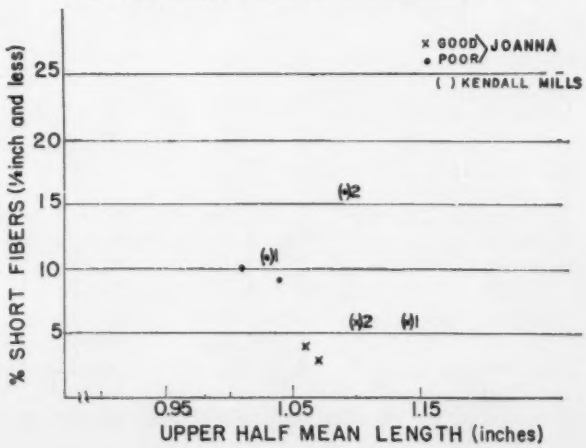


Figure 10. Fibrograph results of some mill-tested cottons.



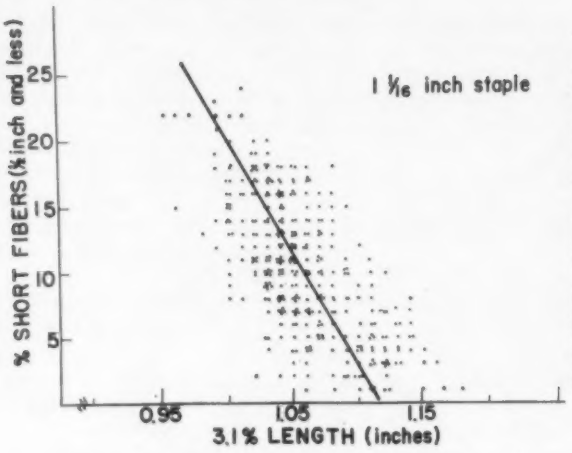


Figure 11. Data on California cottons, 1959 crop.

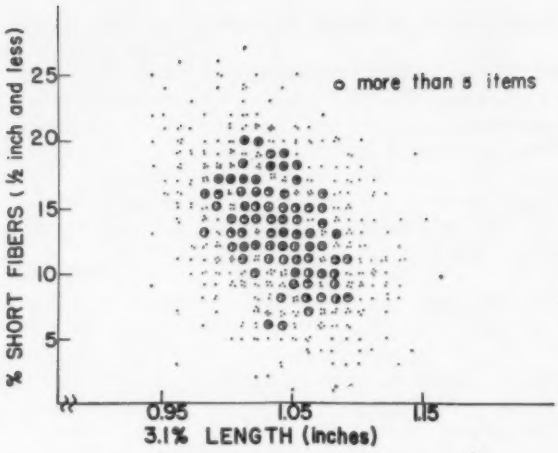


Figure 12. Data on Central (Memphis) cottons, 1959 crop.

showed a progressive decrease in short fibers through carding.

Our use of 10% as the line of demarcation for undesirable cottons is based on the poor-pocessing Joanna cottons shown here and our own tests which confirm the order of magnitude of this criterion.

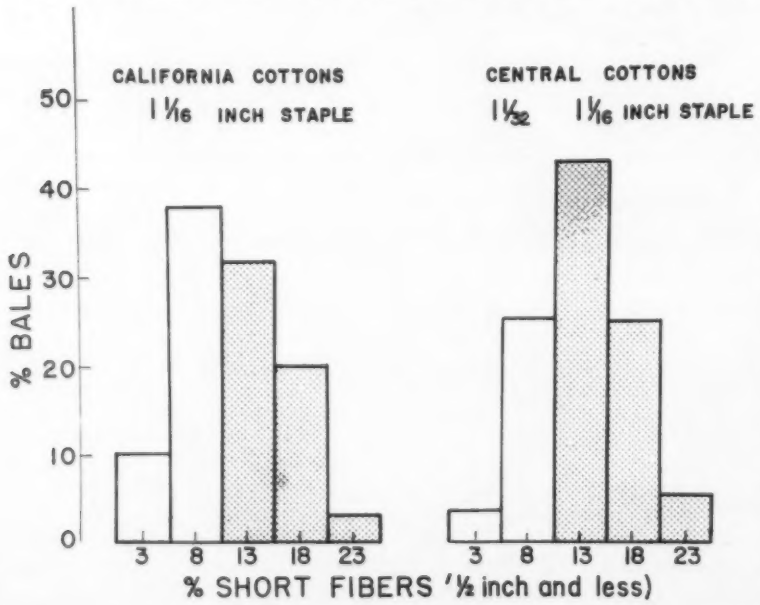
Crop Data. The data on 1959 green card 1 1/16" staple California cottons from the San Joaquin Valley are shown in *Figure 11.* There is a wide spread of 3.1% lengths, from 0.95" to 1.17". The short fibers range from 1% to 25%. For these cottons the variables of staple, variety, and even growing conditions are virtually constant.

When these variables are not kept constant, the spread of points become larger. This is seen in *Figure 12* where the cottons are from the Central (Memphis) area.

Based on the 3.1% length and short fiber content only a very small percentage of the Central 1959 crop and a somewhat larger percentage of the California cottons are really desirable for our mills.

Figure 13 shows a comparison of California and Central cottons based on per cent short fibers. The shaded area shows the undesirable cottons; in California this amounts to 53%, in the Central area to 78%, and for the Eastern section (not shown) to 42%.

Figure 13. Comparison of California and Central cottons, based on per cent short fibers.



50% Span Length. The instrument designers hoped that the 50% span length would correlate closely with the percentage of short fibers found either by measurements of the Digital Fibrograph or the Suter-Webb array method and hence serve as a short fiber index.

We have explored the use of the 50% span length and the ratio of the 50% to the 3.1% span lengths as substitutes for the short fiber measurement.

When homogeneous series of cottons from a common source (as for example the Joanna cottons) are plotted a very high correlation is obtained between the 50% length and the Suter-Webb array or DFS measure of short fibers. This good correlation however immediately vanishes on inclusion of test results from heterogeneous cottons, as obtained in commerce.

Even in the case of the San Joaquin Valley California cottons, where a relatively high degree of homogeneity as a one-variety community might be assumed, the spread of points, as shown in

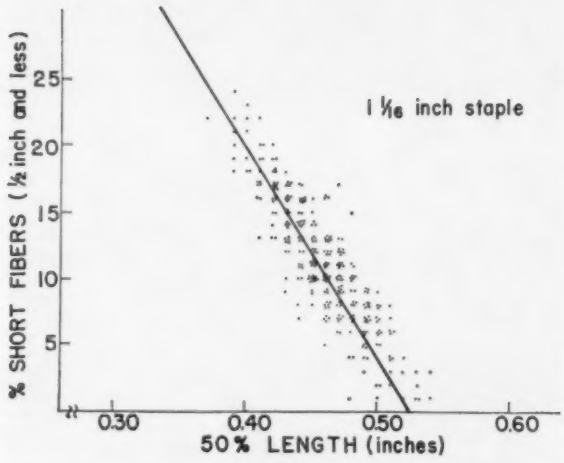


Figure 14. 50% length vs per cent short fibers (California).

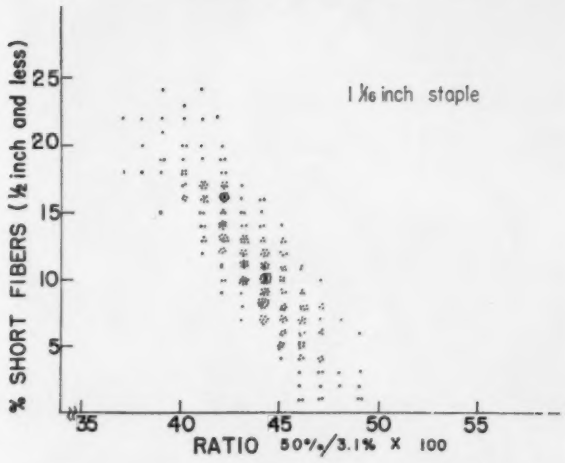


Figure. 15. Digital ratio vs per cent short fibers (California).

Figure 14, becomes so wide that a knowledge of the 50% length does not provide an adequately precise estimate of per cent short fibers.

We continue to measure the 50% span length for we feel that it, or some closely related span length, may provide an additional key to cotton character as yet unresolved.

The use of a Digital ratio, as seen in *Figure 15*, still is not an adequate substitute for short fiber measurement.

SUMMARY

The present work has, of necessity, been devoted primarily to an evaluation of quantities already known to be useful, i.e., the per cent fibers ½" and less in length and the 3.1% span length.

This appraisal leads us to the conclusion that the Digital Fibrograph-Fibrosampler combination provides a very practical, useful, and in view of the character of commercial cottons today, a very timely laboratory test.

More specifically, the precision and reproducibility are fully adequate for routine appraisal of cotton quality. The time required for testing is short enough to be useful in a practical sense.

The Digital Fibrograph does not, however, restrict the user to two or three arbitrary lengths in the fiber distribution. In view of the relative ease of obtaining large quantities of data with the DFS combination, this system would appear to hold further unexplored potentials throughout the industry.

References

1. "Fibrograph Instruction Manual," Supplement 2, Special Instrument Laboratories, March 5, 1957.
2. "Report on 1948 Crop," U. S. Dept. of Agriculture, August, 1959.
3. Marketing Research Report No. 269, U. S. Department of Agriculture, 1958.

The Phantom drafting system ... How it was developed and results of mill tests

by Burrel C. Cole
Cole Engineering Co.

THE LATE Dr. Kettering, of General Motors Corp., believed that anything and everything could be improved. He also believed that mechanical refinements are frequently more important than basic ideas.

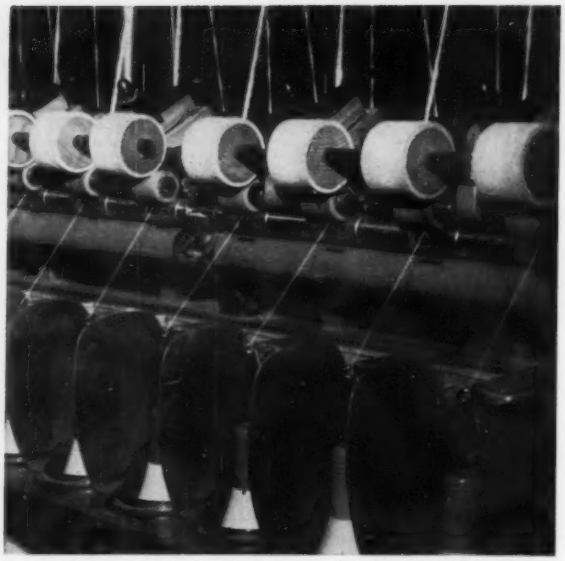
Take the automobile for example: The basic idea is still the same; it still has a frame, a motor, a transmission, a differential, four wheels, a steering gear, and brakes, but the component parts of the modern automobile can hardly be compared with those of original designs.

Many changes in textile machinery so ingeniously devised around the beginning of this century have also taken place. In spite of the number of employees required to operate a cotton mill, the industry is much closer to automation than most of us realize.

The original card with its bulky design and Rube Goldberg drives was and is a wonderful machine. It requires very little supervision. Although no basic changes were made for a period of 50 years, recent developments will make it even more efficient.

In the past ten years modernization has been the order of the day. Perhaps in the next ten years even

Lifting cam lever on top saddle lowers stirrup, releases all pressure. All top roll assembly parts remain in place, but inoperative.



The Phantom system is dry and wide open; sealed lubrication reduces picking and cleaning to a minimum.

more startling developments will be revealed. If they improve quality, increase production, or reduce costs, they should be of interest.

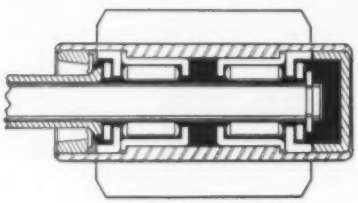


Figure 1. Sealed roller bearing top roll.

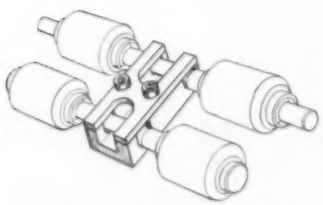


Figure 2. Original Rusco bracket.

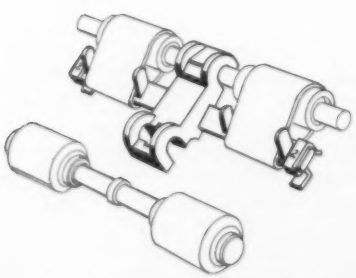


Figure 3. Improved Rusco bracket.

Top Roll. The first step in development of the Cole drafting system was a sealed roller bearing top roll. It is pregreased for the life of the roll. Sealed bearings are not new. They have been employed in many types of machinery for more than 30 years and they usually last the life of the machine.

But why roller bearings? The diameter of a top roll is limited. Roller bearings have several times the load capacity of ball bearings of equal diameter, and a top roll never rotates at high speed.

A special bearing had to be developed. It has hardened and ground rollers, rotating around a hardened and ground shaft, with hardened races pressed into each end of the rotating bosses. Hardened thrust members operate in the same lubricant as the rollers. Tension seals operate against a radius on the shaft, which both seals the lubricant in and lint and foreign matter out.

It took seven years to perfect this roll, including special methods and machinery for precision manufacture at low cost.

Original Rusco Bracket. The first element of the Phantom drafting system was devised at The Russell Manufacturing Co. and turned over to Cole Engineering for refinement. In 1953 they had just installed their first antifriction top rolls. They wanted to do away with front line nebs.

Their conception was to attach a bracket to the shaft of a middle roll supported in nebs and let it extend forward to position and align a nebless front roll—and it worked.

Improved Rusco Bracket. An improved one-piece bracket was developed, which not only positioned and aligned the front roll, but also supported a double boss stainless steel top nose bar, for dual apron drafting on Roth-type frames. The apron guides make no contact with any roll.

Thus cradles were eliminated.

Double-Boss Dual Nose Bars. Shortly thereafter a method was found to attach a removable double boss stainless steel bottom nose bar. According to location of the middle line nebs, any desired tension on short bottom aprons could be established. Thus the need for long aprons and tension pulleys was eliminated. Also by using a vertical pivot on a one-piece saddle, the bracket could be used for weight application and weight distribution to the front and middle top rolls.

Quite by accident, it was found that stronger and more uniform yarn could be produced with no nebs at all, simply by allowing the normal forward thrust on the top roll unit to be checked only by the pair of short bottom aprons. Not only would this establish uniform forward position and parallel relation with the steel rolls, but it further established just the right amount of tension on the bottom aprons, and in balanced relation throughout the frame.

This was the forerunner of the Phantom top roll assembly.

Phantom Saddle Assembly. After finding that a pair of short bottom aprons would establish forward position and parallel relation, the next objective was to perfect an interlocking two-piece saddle that could be die-cast.

The bottom saddle holds at true right angles and in spaced relation the back top roll, the middle top roll, and the nose bar assembly. The top saddle holds at right angles the front top roll, and the top saddle rests on the bottom saddle for alignment, forward position, and also weight distribution. Independent vertical rocking of each top roll is permitted.

The unit is held on gauge with the bosses of steel rolls by the stirrup, which fits into a guide of the pressure unit on the roller beam.

Thus the necessity for suspension bars, nebs, or overarms was eliminated.

Weight and Weight Distribution. The stirrup is attached to top saddle at a fixed distance from the front line roll, just as it was on the oldest known saddle. However, the rest on the bottom saddle between middle and back line rolls is a round-headed pin, and there are three locations. Variations in distribution of weight applied by the stirrup are obtainable.

In the Phantom system the short aprons traveling around correlated nose bars establish a bond between middle top and bottom rolls and very little additional weight is required. Therefore, pressure on the back saddle is applied nearer the back roll than the middle roll.

In the Phantom system, the middle top roll has independent anti-friction bosses. They are perfectly smooth. It is to be understood that in a dual-apron system the steel roll drives the bottom apron, the bottom apron drives the top apron, and the bosses of the top roll merely apply pressure. Why knurls?

Weight Application. Nothing has improved upon the accuracy of gravity weight for uniform pressure applied to the stirrup. At the same time, mills would like to get away from the dead weight and clumsy method of release.

Spring pressure has failed primarily because, with variations in cot sizes and other parts, there has been no simple and accurate way to determine the amount of pressure applied. Even when the springs are in overarms there can be wide variations. The arm is supported by a torsion bar which must be rigidly attached to roll stands, which are in turn supported by the roller beam.

Pressure Unit. The Phantom pressure unit is installed directly on the roller beam in place of the pivot screw. It has a pivoted lever similar to that of the gravity system. A single enclosed adjustable spring applies downward pressure on the lever. With stirrup released, pressure may be adjusted to equal that of any gravity weight by attaching an ordinary scale to the lever at the same point gravity weight is usually hung. This may be done before or after installation.

When weight is applied, regardless of variations in cots or other parts, the lever is brought to level position by a stirrup adjustment on the top saddle, and a point on the weight unit housing indicates when the lever is level. The principle of the pivot screw adjustment has been duplicated except that the adjustment is more accessible.

Weight Release. A cam lever on the top saddle when lifted lowers the stirrup and releases all pressure. All parts of the top roll assembly remain in place, but inoperative. The back top roll lifts ⅛", which stops incoming roving. There is no need to break it back. The front top roll may be removed without removing any other part. Both top roll units may, however, be removed by simply pressing the stirrup rearward out of contact

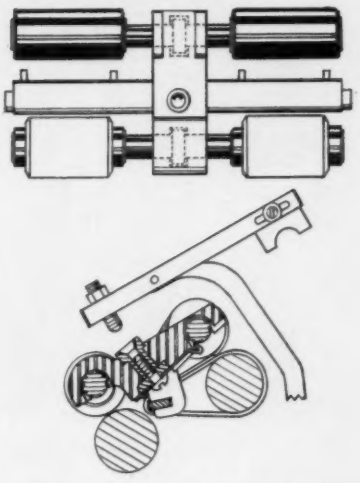


Figure 4. Double-boss dual nose bars.

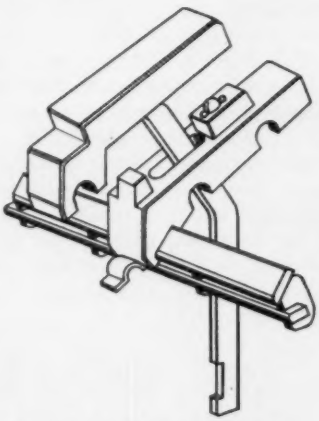


Figure 5. Phantom saddle assembly.

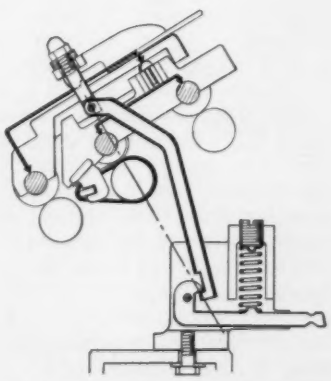


Figure 6. Weight and weight distribution.

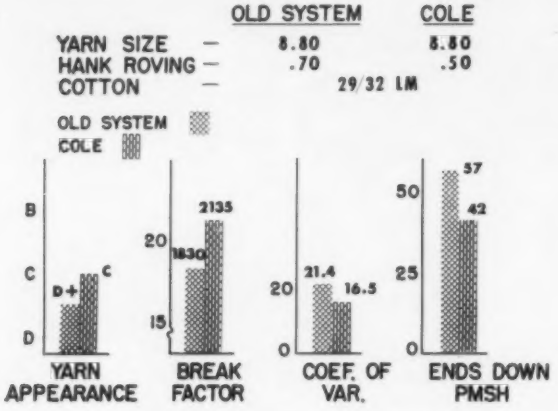


Figure 7. Comparative figures, Mill "A."

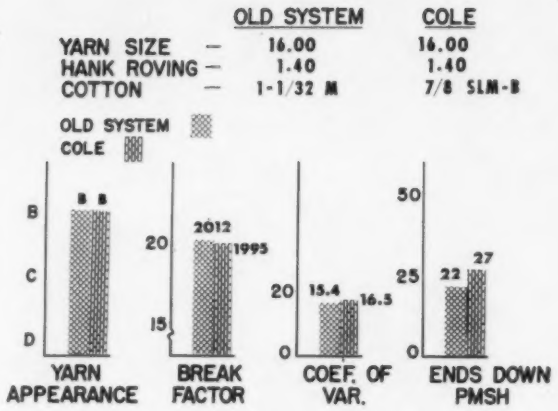


Figure 8. Comparative figures, Mill "B."

with the weight lever of the pressure unit.

Roll Spreads. There are no top roll spread adjustments. The assembly is manufactured to duplicate bottom line spreads, or if bottom line spreads are adjustable they may be set to duplicate standard top roll spreads. Thus, if the front top roll is 5/64" forward of C/L of bottom steel roll, the middle and back lines will be the same.

Forward Position. The forward position of the top roll assembly is determined by the diameter size of the bottom aprons. Forward position may vary from 3/64" to 7/64".

Only continuous synthetic aprons are employed. As belts they have a capacity of 50 lb. However, the tension on each bottom apron is only 5 lb. As everyone knows, a taut belt will outlast a slack belt. Bottom aprons in use more than two years show absolutely no stretch and the units are still perfectly positioned and aligned.

While the apron manufacturer's diameter tolerance is satisfactory for good performance, gauging of apron sizes is recommended at time of installation.

Spare bottom line aprons are installed on each section between the units and they are ample for replacements between annual frame overhauls. It is to be understood that in the Phantom system, a neglected lap or choke will automatically back up the top roll assembly, relieving apron strain and breakage.

Nose Bar Spacing. With positive bottom apron tension, outstanding results have been obtained from 0.50 hank- to 2-hank roving, and yarn sizes from 8.80s to 60s with a fixed nose bar spacing of 4 mm. However, if for any reason a different spacing should be required it may be obtained simply by changing the bottom nose bar holders which are attached to the top nose bar.

Clearers and Cleaning. The Phantom system is dry and wide open, lending itself perfectly to modern blowers and vacuum applications. By reason of sealed lubrication, picking and cleaning are reduced to a minimum. Only a front top roll clearer is required and only a bottom scavenger roll or vacuum collector.

Draft Gearing. Dual - apron drafting permits higher drafts than are usually obtainable with conventional draft gear sets. They also impose a heavier torque load on the middle line, particularly if bottom aprons are taut, and if they are not taut best results will not be obtained. Compound draft gearing with a larger and stronger gear for the middle line drive is therefore recommended.

Mill Tests. As intriguing as they are, mechanical refinements have no place in a cotton mill unless they improve quality, increase production, or reduce costs. For more than two years the Cole system has been tested on more than 200 production frames. Accurate records have been kept.

Mill "A," producing primarily 8.80s from short staple and a Low Middling mix, formerly had four-roll H & B.

Mill "B," producing primarily 16s knitting yarn from short staple cotton, formerly had a three-roll system with long bottom aprons and pencil rolls.

Mill "C," producing 40s combed, a very fine yarn, also formerly had a long bottom apron and pencil roll system.

Mill "D" has conducted exhaustive tests with four current dual-apron systems since January of this year.

To conserve space, consolidated performance charts comparing yarn appearance, break factor, coefficient of variation, and ends down per 1,000 spindle hours with the previous systems have been prepared from information furnished by the mills (see *Figures 7-10*).

Mill "A." Mill "A" produces 8.8s from 0.50-hank roving made up from Low Middling 29/32" cotton.

The mill reports appearance improvement and an average break factor of 2135 against 1830 on the old system. Coefficient of variation has dropped from a 21.4 average to 16.5, and ends down from 57 PMSH to 42.

The improved drafting system

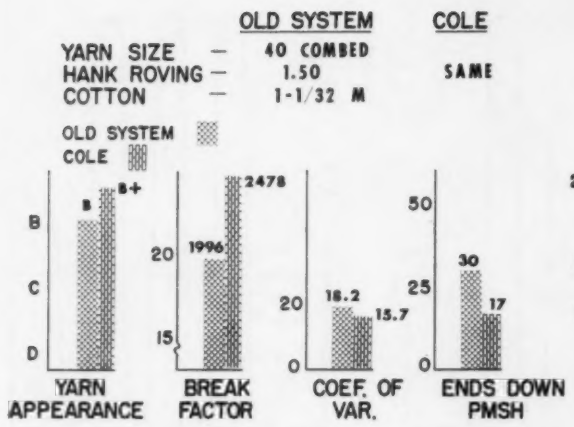


Figure 9. Comparative figures, Mill "C."

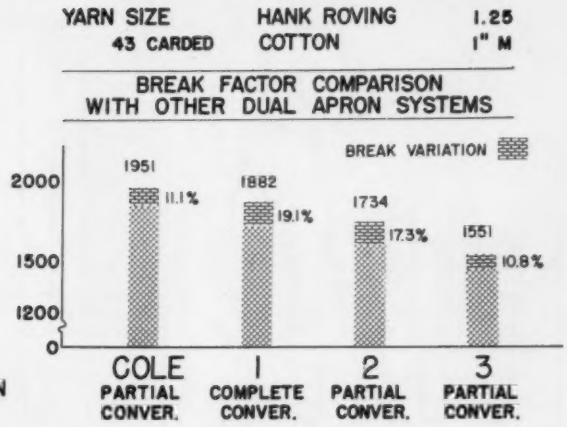


Figure 10. Comparative figures, Mill "D."

has prompted them to improve the creel and package size as well as to install a modern blower and vacuum system.

Considering improved quality, increased production, and reduced costs in the spinning room as well as the card room, winding, and weaving, they estimate that the investment will pay off in less than two years.

Mill "B." Mill "B" was producing 16s knitting yarn from 1 1/32" Middling on their former system. They tried a few bales of 7/8" staple, SLB, on the Cole short apron system, and yarn as well as frame performance was satisfactory.

For the past nine months they have operated all Cole frames on 7/8" staple, while the former system remains on 1 1/32". Here is a comparison: Yarn appearance is the same; average break factor, 1 1/32" staple 2012, 7/8" staple 1995; yarn variation, 1 1/32" staple 15.4, 7/8" staple 16.5; ends down, 1 1/32" staple 22.2 PMSH, 7/8" staple 27.

The ring size on the Cole converted frames is 2 9/16" and the front roll speed is 170 rpm. This mill makes the flat statement that they have been unable to obtain satisfactory yarn from 7/8" cotton on any of their three other drafting systems.

Now it does not take an IBM machine to calculate the savings if they are in the cost of raw material with no increase in processing costs.

Mill "C." Mill "C" has 114 frames of the Cole system, on 40s combed yarn from 1 1/8" Middling cotton.

As compared with the old system, yarn appearance is up from B to B+; break factor is up from 1996 to 2478; coefficient of variation down from 18.2 to 15.7; and ends down per 1000 spindle hours from an average of 30 to an average of 17.

Spinners in this mill formerly operated 22 sides. They now operate 34 and still have considerably less than 100 operations per hour. There were formerly 12 spinners per shift. There are now only 8. Corresponding reductions have been made in picking, cleaning, and maintenance.

Production is up and costs are down in other departments. For example, spooler production efficiency increased 34%.

Mill "D." The foregoing comparisons were of course against outmoded systems. Recently one frame of the Cole system was installed in Mill "D," where there was no previous experience with the Cole system. It is operating against three other modern dual-apron systems. One is a complete conversion from the roller beam up, including new antifriction bottom lines. The other two are top roll and apron conversions. All except the Cole system employ long bottom aprons with tension pulleys.

Each frame operates at the same front roll speed, producing 43s carded yarn from 1.25-hank roving. Staple length is 1" Middling grade.

The chart shows comparison of break factors and variations in break. It is the average of six weekly tests.

The break factor of the yarn spun on the Cole system is 89 points better than that spun on conversion A (the complete conversion); 117 points better than conversion B; and 400 points better than conversion C.

On variations in break the Cole system is considerably better than conversion A and B and equal to conversion C. After all, the variation on conversion C is inconsequential because all spindles were considerably below the worst of the other three.

Other comparisons of yarn quality are equally in favor of the Cole system.

The superior performance of the Phantom system is believed due in part to four characteristics: (1) The sealed and nonchoking top rolls, (2) The uniform tension on short bottom aprons, (3) Uniform weight and weight distribution, and (4) Freedom from adjustments, which are subject to human error.

The Phantom also has other cost saving and time saving features.

● *See the August issue for more Cotton Research Clinic papers.—The Editors.*

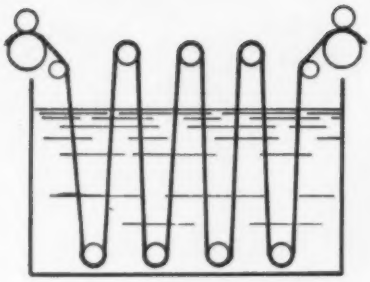


Figure 1

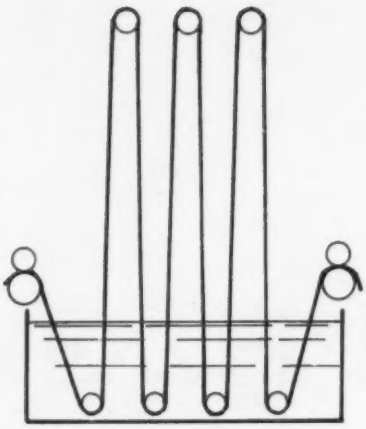


Figure 2

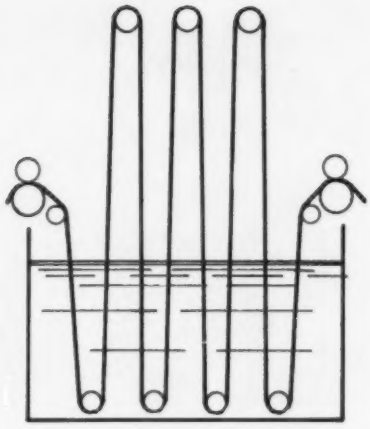


Figure 3

Perhaps the most common compartment washers in use today from which open soaping ranges are assembled are those shown above. Although there may be differences among them in effectiveness of soaping-rinsing, these are offset by the high speeds often required by cotton bleacheries and printing plants. Washer in Figure 1 is commonest for impregnation; Figures 2 and 3 for open soaping.

ASIDE FROM advances in mechanical and electrical engineering, which have brought about higher speeds in open-width scouring and rinsing, together with ease of operation and reduced maintenance, the basic design of compartment washers has remained unchanged. Today's open-width ranges, to be sure, offer many advantages over the models of twenty years ago: They are assembled of individually-driven compartment washers, which are synchronized for tensionless operation, and they are equipped with instrumentation for control of temperature, liquid level, and concentration of treating chemicals.

No significant changes have taken place in design, however, to alter the movement of fabric through liquor, or to increase the mechanical agitation of fabric, or to simulate to a greater degree some of the other beneficial conditions of scouring and rinsing in the rope. Open-width scouring and rinsing, today, still consists of a mere passage of fabric through multiple compartment washers with intermediate squeezing under small pressure.

It is not altogether surprising, however, that so little has been accomplished to increase soaping-rinsing efficiency, for it appears that little can be done toward that end. For one thing, today's ranges must operate at two to three times the speeds of earlier models. And what measures may be taken to improve scouring-rinsing—as by increasing the number of pressure water sprays, or by replacing rollers with reels for greater turbulence of liquor—fall short of the ultimate goal. It appears, then, that for best results a large number of compartment washers must be assembled. Perhaps the most typical of these are shown in *Figures 1, 2,* and *3.*

The selection of scouring and rinsing equipment, as is well known, depends largely on the fabric and its fiber content, and on the purpose of the process; that is, what impurities, unreacted colors, or chemical residues it must remove to prepare the fabric for further processing or to make it suitable for sale. Scouring and rinsing in the rope form (see *Figures 4* and *5*)—namely, slack washing and rope soaping, is most effective. But for certain fabric constructions (of low price range) it is prohibitive in cost, and for many purposes it is not essential. Besides, certain fabric constructions must be prepared or processed only in the open-width form to prevent creases, cracks, and abrasion marks.

In cotton bleacheries and print plants, open-width scouring and rinsing ranges have come into wider usage in the last twenty years. In mercerization, there has been a decided trend to include additional rinsing and neutralization compartments to enable drying and batching in one continuous operation. In dyeing, application of color by continuous processes has been universally accepted, and dyeing ranges have been designed to include scouring and rinsing, though soaping in the rope might still be resorted to.

In printing, several color and chemical developments have taken place to reduce or eliminate the need of soaping in the rope. Pigments have long ago encroached upon traditional color classes, one reason being that they require little or no soaping. And water soluble printing gums and emulsion thickeners have partially replaced starch pastes because they no longer require prolonged soaping for removal.

There is a very compelling reason in print plants for the trend to open-width soaping. Assuming that a shop has ten machines in place, its daily output on a multiple shift basis should range between 200,000 and 300,000 yards, dependent on the quality of work being done. Such productivity would place a tremendous burden on slack and rope soaping equipment. And no doubt much of the processing in rope form would be unnecessary for certain color classes and shades.

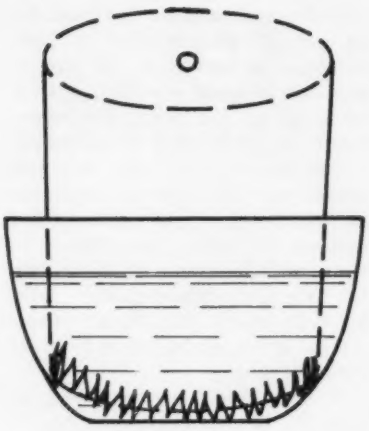


Figure 4

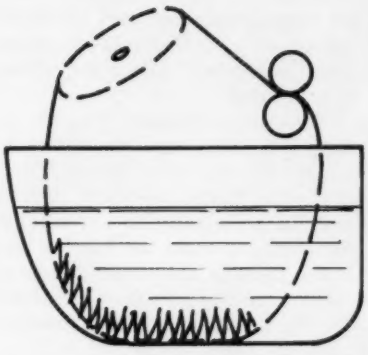


Figure 5

The essential differences between slack washing (Figure 4) and rope soaping (Figure 5), at least for the machines described in this article, are in soaping-rinsing time, and mechanical action (squeezing) of the fabric. The most beneficial characteristic of rope soaping might be described as a series of pull-rinse-squeeze cycles through which the fabric passes. These cycles cannot be simulated in open-width ranges of conventional design. Mechanical action in slack washing is more gentle, even if soaping-rinsing time is extended.

OPEN SOAPING

How much can it be improved?

Modern open soaping ranges for printed cotton fabrics offer high productivity and ease of operation. But the basic design of compartment washers has not changed over the years to allow increased mechanical action on the fabric for better soaping and rinsing

by J. P. Millburn

Exclusive

What Makes Rope Soaping Efficient? Before appraising open-width scouring and rinsing, it might be interesting to briefly examine slack washing and rope soaping (*Figures* 4 and 5) from the standpoint of their efficiencies. How they differ from each other, why they are effective, and what conditions make them so. Following this brief examination, the remainder of this paper can center on a particular scouring-rinsing problem—namely, soaping off cotton fabrics printed with such color classes as vats, azoics, and aniline black, which present most problems.

In slack washing and rope soaping, the fabric has an opportunity, first of all, to become thoroughly wetted. There is ample time for chemicals, surface color, and residues to begin to leach out of the fabric since it is in a highly saturated condition at a temperature which cannot fluctuate rapidly. Moreover, the fabric is in a slowly moving condition most of the time and receives multiple passes through squeeze rolls (in the case of a rope soaper) which progressively remove surface color and residues as the fabric passes onward through cleaner liquors.

But an important action precedes each squeezing: the sudden pulling of fabric through the liquor as it is drawn toward the squeeze rolls. This action tends to open up the fabric, exposing it to a rather strong counter-current scouring effect for a distance of several yards. Because of this repetitive pull-rinse-squeeze cycle, which is extremely effective in the case of soaping off heavy shades, a high overflow of liquor is essential to prevent redeposition of color on the white areas.

The essential difference between slack washing and rope soaping, then, is that the mechanical action created by squeezing the fabric (in rope soaping) makes it a more effective operation. This is particularly noticeable when a fabric with a stiff hand must be broken down.

Unfortunately, not all conditions of rope soaping, in particular, can be duplicated or even simulated in open-width soaping. For one thing, the time of soaping-rinsing is by necessity short. Furthermore, temperatures have a tendency to fluctuate; and generally they cannot reach a range of 180-200 F, and be kept there, unless the water is preheated. Also, mechanical action on the fabric is lacking, and the fabric may be under more tension than is desirable, unless the range is of modern design and has been properly maintained. Lastly, the sudden movement or pulling of

fabric through liquor, followed by squeezing, cannot be simulated; at least not in any of the three designs of compartment washers shown here.

The selection of compartment washing units from the three designs shown should offer few problems. Before discussing their selection, however, it might be worthwhile to briefly examine what takes place in soaping off prints, even though the sequence of steps in the process is well known. First, there may be a development of color—to complete the chemical reaction, as in the case of vats and aniline black. Then, there is a gradual solubilizing action on the gum (gelatinization, in the case of starch) and a loosening of color, which must be rinsed for brightness of shade. Finally, the white ground must be cleared, and the fabric rinsed free of soaping-rinsing liquors. This is quite a large order for a high-speed processing range, which normally allows about one minute of actual soaping-rinsing time. Needless to say, one passage is not always sufficient.

The compartment washer in *Figure 1*, which has a box of large capacity but offers a shorter fabric passage, is most widely used for impregnation purposes, where contact time between treating chemical and fabric can be short. An example of this might be the padding of enzyme. The compartment washers in *Figures 2* and *3* are most commonly used in open soaping ranges.

The deeper box has some advantages—and disadvantages as well. Temperature is more easily controlled, and there is perhaps a more thorough penetration of the fabric with liquor. But there is some loss of time in changing soap between runs, because a larger volume of liquor must be heated to temperature, unless facilities are available for preheating the water.

In the washing compartment of smaller volume, the temperature is more difficult to control, particularly if colors bleed profusely and a heavy stream of fresh water must be added constantly to keep the bath reasonably clean. (This condition is true of rope soaping as well, in the case of heavy shades but not to such a degree.) Thus, the shallow box can be more wasteful of water and heat and its temperature may not be maintained at a uniform level under these conditions unless the water is preheated.

The compartment washer in *Figure 3* is perhaps the most efficient of the three units. "Skying" the fabric (a term that it may be permissible to use here) is beneficial, for on the fabric's upward passage the soaping liquors have a tendency to flow down the fabric, creating a mild counter-current effect. This action is, of course, lacking in the washer shown in *Figure 1*.

It is interesting to speculate on the results that would be obtained, in cleanliness of fabric and color, from open-width ranges, each assembled of one of the three compartment washing units shown on these pages. Of course, some differences could be detected but not in all cases; for the results obtained would depend on color class, printing gum, depth of shade, fabric construction, and the like. The short time of contact between fabric and liquors, however, would tend to equalize conditions in the three ranges. And certain color classes, such as vats and aniline black, might well require a second passage, including an intermediate desizing.

Can Design of Washers Be Improved? No doubt improvements can be made in soaping-rinsing efficiency of all three ranges. Hot water sprays can be placed at the nips; and cold water sprays can be installed to rinse away cold-water-soluble residues — forced against the fabric under pressure. Also, reels of the paddle type can be installed in place of smooth rollers (below liquor levels) for increased turbulence; and perhaps some of the mechanisms which induce vibration to the fabric—about which one hears occasionally—might be evaluated.

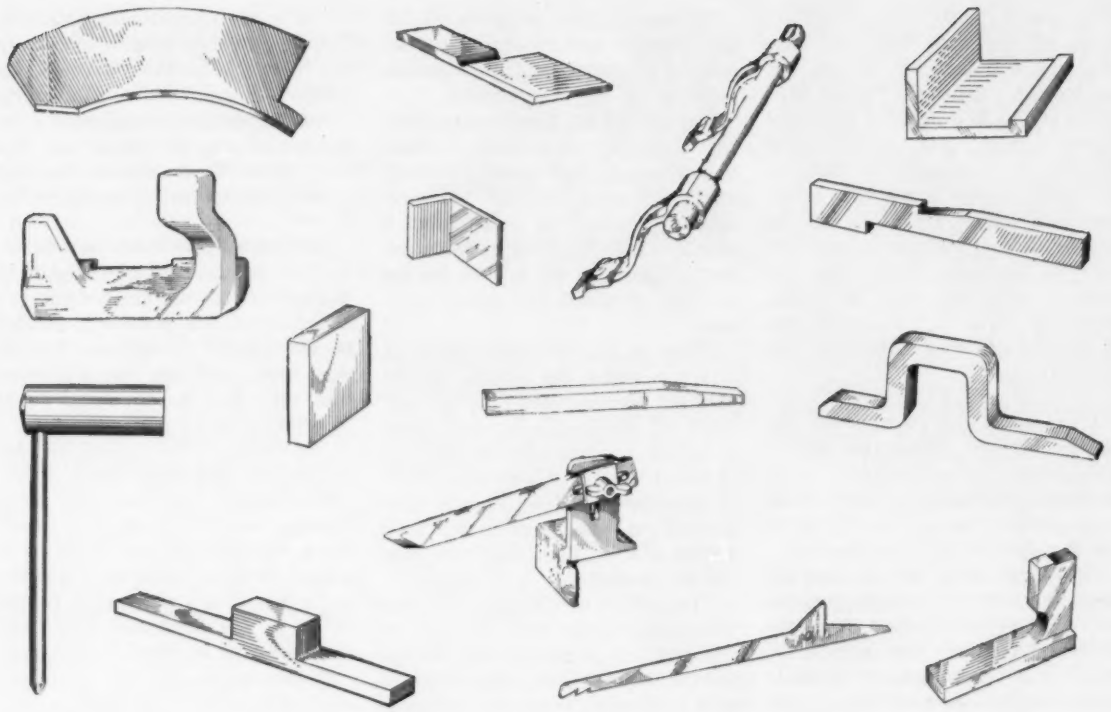
Nevertheless, the basic design of the ranges would remain unchanged and the fabric's movement would be unaltered. Aside from the fact that the water could be preheated to any desired temperature, other beneficial conditions of rope soaping would not have been simulated. Contrast, let us say, 30-40 minutes of rope soaping, or even 5, 10 or 15 minutes of slack washing, with 2 minutes, at the most, for open-width soaping—at a considerably lower temperature range, perhaps, which may be a serious deterrent to better soaping of certain color classes. Of equal importance to time and temperature, however, is the pull-rinse-squeeze cycle through which the fabric passes, which is an exclusive feature of rope soaping.

It has long ago been demonstrated in conventional bleach house rope washing that machines designed on the counter-current principle can operate at high speeds (well in excess of 200 ypm) without a sacrifice of rinsing efficiency. It might be logical to assume, then, that if the pull-rinse-squeeze cycle could be simulated in the open width, it would still be effective at high speeds. For what is often required in the latter stages of soaping-rinsing, after the gum and surface color have been loosened, is repetitive rinsing in progressively cleaner liquors. This also calls for thorough intermediate squeezing.

A compartment washer of radical design is not the answer to better soaping and rinsing in the open width. The history of machines, based on radical designs, has been characteristically short. Perhaps what is called for here is a re-appraisal of rope soaping conditions, with the aim of translating the essentially beneficial ones into units of simple design.

Certain developments of a chemical nature have already taken place to reduce the need of prolonged soaping. Among these are the trends toward emulsions and water-dispersible gums, which are applied at low solids contents. And instantaneous desizing of starch pastes (which in all likelihood will continue to be used as printing gums) appears on the horizon.

But regardless of the high efficiency that open soaping may attain, through advanced design of compartment washers or through advances in color application, or in the perfection of detergents, expert supervision will still be required for quality work.



GAUGES in Draper loom maintenance

Why loom gauges are needed in the mill and how to use them

Article 6—Establishing a framework for preventive maintenance*

Staff prepared
Exclusive

LOOM MAINTENANCE is carried out under two schools of thought: restoration and prevention. The latter, the younger of the two, is relatively a newcomer and shows every earmark of being the more powerful, for it forces management, through never-ending inspections, to *direct* the maintenance program.

Without those inspections, without managerial attention to minute detail, the program quickly gravitates to the shambles usually accompanying a hands-off policy—"Let the seconds tell us what's wrong out there."

This is not an indictment of management who maintains an enviable "batting average," an enviable performance record over the years, with a program the unthinking may point to scornfully as old-school stuff.

Call the maintenance program a product of any school you wish, but if the operation is successful, management is in there seeing that looms are maintained adequately and enjoying a low-seconds, high-production existence. And if seconds are low and production is high, somebody is *preventing* stumbling loom performance.

This entire series of articles, subsequently to be bound in manual form, is devoted to prevention, not repair. For to use the word "repair" suggests a loom must fail before it gets fixer attention.

In a similar vein, pictures of

*The first article of this series was published in the January, 1960, issue. Parts 2, 3, 4, and 5 appeared in the February, March, May, and June issues, respectively. After publication of the series is completed, the articles will be reprinted in book form.—The Editors.

loom parts that have received about all the wear they can sustain and still perform should not be looked upon as "worn-out" parts, but looked upon as parts replaced before they could cause trouble. The amount of wear a part can sustain under the latter condition varies from one operation to another and can be decided only at the local level. But the decision certainly shall be made, either by a roll or two of seconds or by management through the fixer's eyes.

Framework of Prevention. No one knows just where the idea of preventing loom trouble first showed itself, but it probably took place generations ago, shortly after the first power looms appeared.

Of course, even before that the hand weaver had ample time to observe as he tramped the harnesses and threw the shuttle. So, true loom maintenance possibly began with some prehistoric character making a mental note to

"peg his loom more securely to the cave wall before the (* - & - - !) frame fell into the fire."

But of more recent years someone got his job running well enough to let him look around for means of keeping it that way. And for generations, industrious fixers have "dug" into the inner workings of their looms between warps.

In many mills today, that between-warp checking is about all the prevention practiced. But since styles have a way of changing and bringing on different warp running times, a preventive program based on warp-out checks alone is a rather happy-go-lucky affair—some warps simply seem to run year in and year out; others seem to run two minutes at the longest.

To render the program a bit less chaotic, and to apply a measure of effective control, management gradually has settled on a "fixer layout" or "unit responsibility" scheme that permits a fixer to devote adequate time to a block of looms assigned him for preventive work. The assignment is usually made by dividing the number of looms on the section by the number of shifts the plant operates.

Thus, in a three-shift operation, a fixer keeps the entire section running, and devotes time to "his" third of the looms as well, time in which he digs into the motions outlined later in this article. There usually are routine chores performed at warp-out under such systems, and they may or may not be extensive.

The system of scheduled preventive maintenance is a take-off on the practice of placing the full responsibility for the maintenance of a particular loom on a particular fixer, and since it grew out of the older system, it brings with it much of the familiar procedure but adds a greater measure of managerial control. The transition is relatively painless, provided management is first trained in the new system.

Scheduled Preventive Maintenance. It works this way:

The looms are divided to assure an equal distribution of the work across the number of shifts operating. Then a chart or similar device is prepared to show the extent of each shift's and each fixer's responsibility. Then a card file system or journal is set up for each loom.

Each week each loom fixer is given the number of the loom he is to renovate that week. From a check list or a job-breakdown sheet he dismantles each motion, one at a time, gives it a thorough check for wear, replaces those parts that are in questionable condition, and restores the motion to working order. With this system, a plant assigning 75 looms per fixer gets every motion on every loom renovated twice per year on a three-shift operation. Normally, looms are selected by simple rotation; repairs made are entered on the loom's card.

There are checks and balances. The first level of supervision above the fixer checks every motion the fixer sets up. Then succeeding levels of higher management may indulge in spot checks on the lower level. The system works, but it requires special training.

What the Fixer Examines Weekly. The list that follows is purely suggestive, for the final check list will have to be drawn up locally to fit specific conditions. But in due time each of the following will be taken up in detail so as to establish cohesion.

For instance, there may be confusion in the first two items, "loom speed" and "clutch." Since the two are related, one may easily be a subhead of the other. It is such individual taste that sees the same job given exhaustive breakdown in one plant and very brief treatment in another. The items:

Loom speed
Clutch
Alignment
Pick motion
Rocker shaft and bearings
Parallel motion
Midget feeler
Stop motion, filling
Stop motion, warp
Transfer motion
Take-up motion
Let-off motion
Harness timing and shedding
Brakes
Temples
Protector motion
Battery
Cloth stands
Lay guide

Loom Speed. This one should be easy, since there is no breakdown to be followed. But it is so often overlooked entirely, or approximated, that it easily becomes "one of those things the boss gets ex-

cited about once in a while." That is quite true once the boss starts getting concerned with a missing one or two per cent production.

Since a loom sits there and wags its lay in perfect pick-per-minute time, it seems an easy matter to grasp the lay, glue the eye on a nearby clock, and count off the picks for ten or fifteen seconds to arrive at the loom speed. The system is fool-proof if the fixer can find a clock handy, begin and end exactly on the count, multiply correctly, never get lost in the count, etc.

Tachometers, not being human, are afflicted with only mechanical ailments (they don't need clocks, aren't disturbed by shapely battery fillers, etc.), and as such are far more reliable in indicating revolutions per minute. But if management is content with the loom speed readings taken by feel, the fixer cannot be expected to buy his own tachometer to satisfy his own curiosity about his own loom speeds.

If an error of one (1) is committed in counting loom speeds by feel for a 15-second period, the error is raised to 4 when the time is extended to 60 seconds. That is a better than a two-per cent error if the looms are supposed to be running 180 ppm, and if this seems insignificant, think of it in terms of weave room costs or income for a week, a month, or a year. It's really not worth the gamble.

(To be continued)

Executive views *(from page 81)*

markets. If American mills can get a large part of their requirements from this extra cotton raised under Plan "B," they will need less of the Plan "A" cotton and more of it will have to be disposed of abroad at a subsidy of eight cents a pound, or maybe even more, since if we increase the amount to be disposed of, this will probably automatically push down the price.

Perhaps the most interesting feature about this Plan "B" cotton is the large amount of it which was bought last season on the basis of paying a premium in order to get it ginned properly. Spinning mills were willing to pay a price based on about two grades higher than the official cotton classer's grade in order to clean it with their own machinery instead of with the ruinous cleaning methods used in the gins.

Manufacturers of cotton cleaning machinery for the textile industry have always tried to avoid extremely harsh action on the cotton, and from time to time machines which were introduced to the industry, and which were too harsh in their action, have disappeared from the market. Nothing approximating the gin lint cleaner has ever been accepted by the cotton spinning industry. Manufacturers of these gin lint cleaners have installed them in cotton mills and they have been found unsatisfactory, even when operated at very moderate rates of production compared to those found in gins. The mills that are buying this Plan "B" cotton ginned to specification are putting it through this specialized textile mill cleaning equipment and carding it under conditions which give them better yarn than they can make out of gin-damaged cotton.

ALL OF THIS frightful damage which has been done to our cotton has apparently been done to try to get an extra half a cent or one cent a pound for the farmer, and we have never seen any reason why this damage could not have been stopped any time the Department of Agriculture wanted it stopped. After all, the USDA is responsible for the official grades of cotton, and if the gins were doing anything to make the cotton less readily spinnable, it should have been the duty of the Department of Agriculture to downgrade cotton given such injurious treatment instead of up-grading it, as has been done. Repeated tests have shown that in general, the higher the grade of the cotton, the lower the grade of the yarn when this overginned cotton is being tested.

In one series of tests made several years ago the same cotton was ginned by several different methods, and the resultant lint was officially classed from Strict Low Middling to Strict Middling or slightly better. There was one sample which graded very nearly Strict Good Middling, and it made the dirtiest yarn of any of the samples, while the Strict Low Middling made the cleanest yarn. A good many members of the spinning industry have known these things about cotton for years, but have been fighting a losing battle against political pressure inherent in a big boondoggle such as this farm support proposition. Now practically the whole cotton spinning industry knows the story, and each season sees mill operators more and more disgusted with the kind of stock they get from gins which are constantly putting in more and more injurious cleaning machinery.

As more and more spinners voice their disapproval of practices approved by the Department of Agriculture, maybe something can ultimately be done to produce cotton such as the spinners want, since they are the only people that afford a market for cotton. The experiences that mills have had with this Plan "B" cotton have shown conclusively that there is no sense in trying to produce cotton with an artificially high grade when mills prefer the lower grade cotton properly ginned and are willing to pay extra to get it.

"How we cut storage costs"

Modern warehouse and up-to-date material handling system at The Palatine Dyeing Co. results in better customer service, greater processing efficiency, fewer complaints, and less rescheduling of orders

Receiving facilities in the old building were inadequate; one small elevator (right) carried single cases to the upper floors.

Old multistory warehouse was inefficient.

Typical storage area. Individual cases were hard to locate, could be moved only by hand.

by William Don
Plant Engineer
and Alvin Goodman
Industrial Engineer
The Palatine Dyeing Co., Inc.

Exclusive

EVERY EXECUTIVE is constantly faced with increased costs over which he seems to have little or no control. Among these we can list the factors of heavier taxes, the rising cost of raw materials, and increases in transportation expenses. It is, therefore, something of which we can be proud when a change is made that does substantially reduce an item of operating expense.

A modern warehouse and an up-to-date material handling system at The Palatine Dyeing Co., Inc., St. Johnsville, N. Y., has proved to be a wise investment.

Growing from a small single plant founded in 1922, this commission dyeing and finishing concern steadily expanded until it required storage space in several locations, some as far as 12 miles from the plant. These warehouses were old multistory buildings with inadequate elevator facilities.

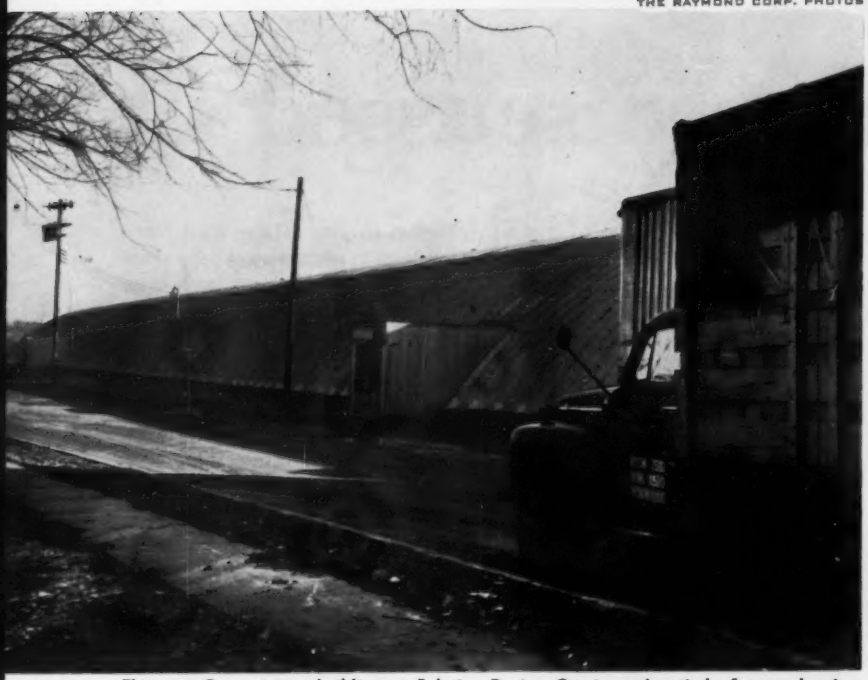
Palatine processes knitted nylon, rayon, Arnel, and acetate fabrics, or combinations of these materials, which are sent to us by manufacturers and stored before processing. As many as 6,000 cases of unfinished goods from manufacturers are consigned at one time, yet each case must be readily available for processing.

Palatine's new Quonset-type building, 94 feet wide by 500 feet long, now allows us to store all goods under one roof. The building is equipped with cantilever racks which extend to the ceiling. The racks are set up with 6-foot, 8-inch wide aisles and are serviced by two electric straddle trucks designed especially for narrow aisle operation.

A specially engineered conveyor system extends along the full length of the building. The con-

←BEFORE

THE RAYMOND CORP. PHOTOS

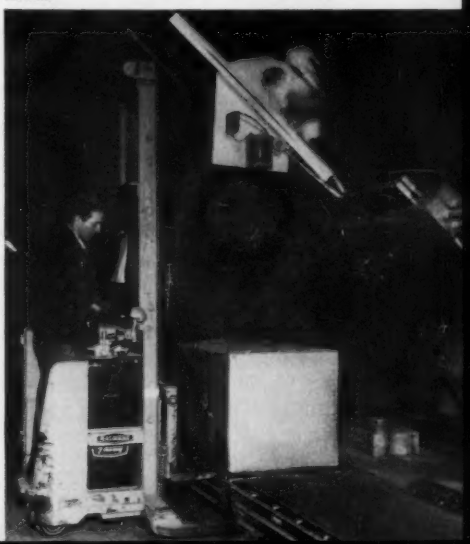


This new Quonset-type building at Palatine Dyeing Co. is used entirely for warehousing.

Electric-eye controls on new conveyor can be preset to stop incoming shipments at specific stations along length of the warehouse.

Warehouse has ceiling-high cantilever racks.

When a processing order is received, goods are moved on the conveyor into the dyehouse.



veyor is set up with stations operated by photoelectric cells so that incoming cases can be stopped at the proper storage section. A master control switch at the loading end of the conveyor allows one man to operate all stations.

Goods are received at one end of the warehouse, checked in, and assigned to an empty storage area. The cases then move on the conveyor to the proper stations where they are stopped by the electronic control. Lift truck operators take the cases from the conveyor belt station and place them in racks. As one case is taken off the station, another automatically moves forward.

When a processing order is received, the truck operator is given an order selection list showing the proper case numbers to be taken from stock. Using the electric truck, he moves the cases to the conveyor station from which they move into the processing area.

This new setup has proved very efficient. There is no longer any delay in getting goods from storage into the processing plant so that the dyeing and finishing departments can schedule a closer continuity of operation. Two over-the-road trucks with drivers are no longer needed. Duplication of warehouse personnel has been eliminated.

The new warehouse also makes order selection quicker so that processing is faster. This results in better service to our customers, greater efficiency of our processing operations, and, of course, fewer complaints and rescheduling of orders.

Management is now in closer touch with the warehouse operation. Good warehousing is important because the storage of unprocessed goods is part of the service we render to our customers. Special emphasis can be placed on this point because ours is a "service" industry and the future success of our business will always depend on the good will of our clientele.

AFTER→

Clearers discussed in

Mill superintendents and spinning room supervisors also talked about

- ☐ *Filling spinning*
- ☐ *Large-package roving*
- ☐ *Paper-tube jamming*
- ☐ *Soft cots*
- ☐ *Vacuum sweepers*
- ☐ *Antifriction top rolls*
- ☐ *Gear testers*
- ☐ *Relative humidity*

Staff report

HIGHLIGHTS of that portion of the spring meeting of the Textile Operating Executives of Georgia which dealt with spinning practices and recently developed equipment and materials for the spinning department are reported below. For a report of the carding discussion, see TI for June, 1960, pages 104-107.

Synthetic Clearer Coverings. The type of clearer being used varies from a relatively smooth covering to a fluted, corrugated, "flipper" type that can be run fast or slow merely by setting it on top of the driving roll to run in a different direction.

The design of the "flipper" type is such that in one direction of rotation the "flippers" resist rotation and consequently run slowly; when turned around they cease offering such resistance and turn easily for "fast" rotation. They appear to do differing amounts of cleaning at slow and at fast speeds.

While it is difficult to draw a conclusion from the discussions, it seems that some five mills are having trouble with waste accumulation in the drafting area where "flipper" types are used. One plant reports the clearer "looks good" but that waste was entering the yarn, waste that reasonably should be taken up by the clearer.

But two plants report good results from the "flipper" type, and perhaps it is significant that these two mills run the "flipper" types "fast."

Roller picking schedules appear unchanged in half the cases; were changed to higher frequencies in half.

The smoother types of synthetic coverings appear to do an adequate cleaning job, although one plant is forced to pick rollers a bit more often than is necessary where their cloth-covered rolls are running.

Yarn counts range from 2s to 48.50s, but this seems unrelated to clearer success or failure.

Obviously, each clearer type has to be "checked out" locally to determine the most effective. From the floor came the question: "Has anyone tried running the 'flipper' type on fly frames?"

Came the reply, "Run them fast and they will do a good job."

Filling Spinning. Table 1 lists filling spinning package data.

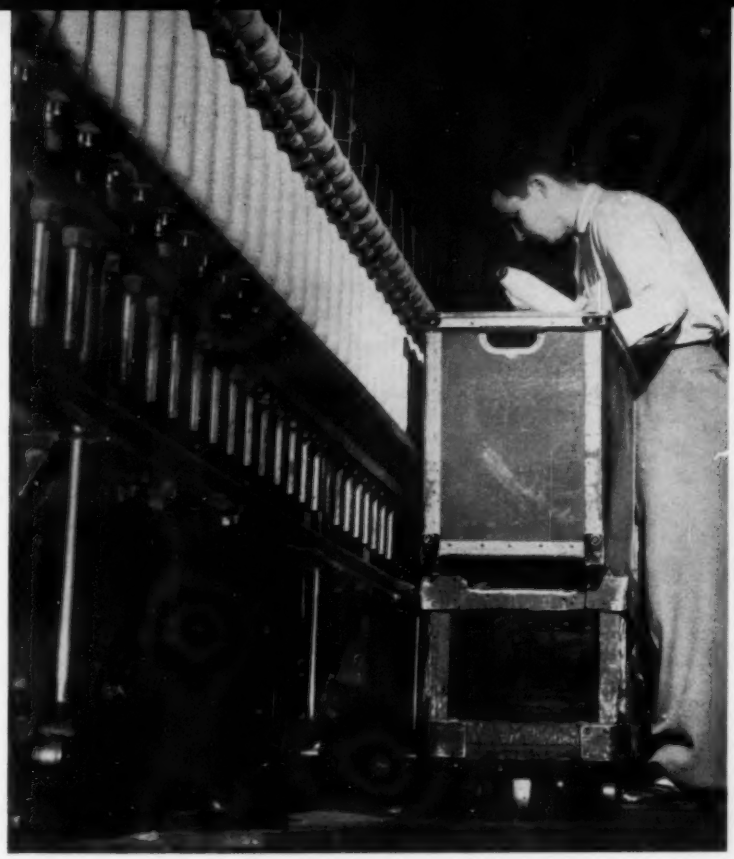
Creeling Large-Package Roving. For most of the data pertaining to this, see *Table* 2.

Block creeling is practiced by

TABLE 1
Filling Spinning Package Data

Mill	Yarn count(s)	Twist multiple	Quill Length (")	Package diameter (")	Length of taper (")	Cam type & size (")	Cam follower size (")	Net pkg. wt. (oz)
B	48.50	3.11	9.00	1 15/16	2 7/16	3-lobe	1 1/4	4.32
C	13.00 to 43.00	3.80	8.75	1 5/8	1 7/8	3-lobe	1 3/16 x 1 1/8	1.92
E	9.75 to 15.50	4.35	8.75	1 5/16	2	8-lobe	1 1/4	1.65
F	14.50	3.86	8.75	1 9/16	2	Reg. filling	—	2.24
G	3.25 to 16.00	3.35	8.75	1 7/16	2 1/4	Reg. filling	1 1/8	1.52
H	41.00	4.25	8.00	1 5/16	1 3/4	4-lobe	1 3/8	1.34
N	4.75	3.50	8.75	1 3/8	1 13/16	Heart shape	1 5/32	1.46
O	3.50 to 18.00	3.75 to 3.85	8.75	1 3/8	1 3/4	3-lobe	—	1.45 and 1.60
P	6.00 to 20.00	3.40 to 4.00	8.75	1 1/4 and 1 3/8	1 3/4 and 2	3-lobe	1	1.66 and 2.32
Q	17.50	3.75	8.75	1 11/32	1 1/4 to 1 7/8	13" dia. 4-lobe	1	2
R	14.00 to 45.00	3.52 to 4.43	8.00 to 8.75	1 1/4 to 1 11/32	1 1/2 to 1 7/8	3-lobe & 4-lobe	1 1/8	1 1/4 to 2
T	16.00 to 25.00	3.50 to 3.75	8.75	1 3/8	2	3-lobe	1 1/8	1.65
V	13.30 24.60	3.85 4.15	8.75 8.75	1 13/32 1 5/16	1 7/8 1 7/8	3-lobe 3-lobe	1 3/16 1 3/16	1.87 1.65

Georgia



one plant running synthetics. The firm uses preset counters to control roving package yardage, creels while the frame is standing for doffing, keeps one frame for running out pieces, and enjoys so little variation in package length that the bare wood of practically all bobbins can be seen when the frame is stopped for doffing.

Paper Tubes Sticking on Spindles. In almost half the cases reported this is not a problem. But where it does exist, it is rather acute. Reasons for their sticking range from thread chokes on spindles through damaged ferrules to doffers jamming them too tightly onto the spindles.

Thread chokes are simply cut off, ferrules may be reformed, and doffers may be taught to jam the tubes less vigorously. One firm applies paraffin to the top of the spindles, another polishes the spindle contact area with crocus cloth, and still another firm recommends a cushion on the bottom of the automatic spooler "assorting" table to prevent ferrule damage as the tubes drop out of the conveyors.

In one instance it is reported that spinners can cause jamming if they do not stop the spindle before dropping the tube on it. Thus a spinner can sometimes jam one so tightly in piecing up that the tube must be driven from the spindle.

Soft Cots. One of the reporting mills tried the soft cot for a while but returned to a cot of medium hardness. One plant uses them on the front line only; one uses them on the back line only. Three firms report an increase in breaking strength; three report a reduction in ends down, while one has experienced no change. One firm experienced excessive lapping on the soft cots.

Three firms buff soft and other cots on the same schedules—yearly; 6-12 months; and 5 months respectively. One buffs the soft ones yearly and the harder ones every 3 months; another buffs the soft ones every 4 months and the harder ones every 6 months.

Vacuum Sweepers. Mill D is the only one of the reporting mills using traveling vacuum floor sweepers, and this firm reports that the cleaner takes care of about

TABLE 2
Methods of Creeling Large-Package Roving

Mill	Yarn count(s)	Hank roving	Package size	Package weight (oz)	Where is roving kept?	Who creels?
C	17.00 to 31.00	0.60 & 0.90	12" x 6½"	64	In boxes	Spinners
E	8.50 to 15.50	0.52 & 0.72	14" x 6½"	76	In boxes	Spinners
F	25.75	0.983	— —	—	In boxes	Spinners
G	6.50 to 20.00	0.80 & 1.00	12" x 6½"	52	Atop creel	Spinners
I	1.25 to 7.50	0.40		64 & 72	In boxes	Spinners
K	6.00 to 17.00	0.65	12" x 6½"		In boxes	Spinners
O	8.80	0.50	13½" x 7"	75	In boxes	Spinners
P	6.00 to 20.00	0.56	12" x 7"	68	In boxes	Spinners
Q	3.00 to 15.00	0.60 & 0.70	12" x 6½"	58	———	Spinners
V	3.00 to 14.25	0.50 & 0.80	14" x 6½"	79	In boxes	Spinners

TABLE 3

Antifriction Top Roll Buffing and Greasing Schedules

Mill	Buffing cycle (mos)	Greasing cycle (mos)
A	6	12
B	12	6
C	12	36
D	6-12	—
E	8	*
F	6	24
G	*	*
H	5	—
M	6	*
O	6	—
P	4	24
Q	*	*
R	24-36	24-front line 36-middle line
T	12	6
U	6	3
V	5	10

*See discussion

⅓ a sweeping job. The firm further states that it has helped reduce cleaning costs and adds that the unloading point should be removed from over the frame because of the possibility of scattering waste into the work.

Henry Walker, spinning discussion leader, and **Jim Wright**, executive committee.

Lee Wynn and **Jesse Bradshaw** do a bit of "private" research during a discussion.

TABLE 4

Relative Humidities and Temperatures used in Spinning with Vacuum Scavengers.

Mill	Desired humidity (%)	Desired temperature (F)
A	55	85
B	42	88
C	45 to 50	85
F	52	85
G	50	80
H	45	85
K	48 to 50	—
O	55	—
P	39 to 41	—
Q	49 to 50	—
R	48 winter	85
	55 summer	85
S	50	85
V	45 to 50 winter	85 to 90
	50 to 60 summer	90*

*Considered the maximum for good operation, but summer temperatures often force indoor conditions up to 100 F. This firm operated with lap sticks at about these same values.

Antifriction Top Rolls. For the buffing and greasing cycles of those mills reporting their use of these rolls, see *Table* 3. Some of the variations need explaining, as: *Mill E* greased the rolls the first time six months after the installation and then settled on a 12-month schedule; *Mill G* ran all such rolls (except for replacements) three years before buffing them for the first time, has run them one year since buffing, and predicts a probable added two years of service before buffing them the second time.

TABLE 5

Temperature and Humidity in Spooling, Winding, Warping

Mill	Humidity (%)	Temperature (F)
B	50	85
C	45 to 50	—
E	50	78 to 91*
H	65	—
I	60 to 80	—
L	55 to 60	75 to 80
M	72	82
N	60	—
O	50 to 55	—
P	40 to 45	—
Q	50	
S	55	85
U	65	80

*Fluctuates with outside temperatures.

At *Mill Q* the front line is buffed every six months; the middle line is not buffed at all. The front line is lubricated every six months; the middle line is lubricated every 12 months. *Mill M* has been running the bearings in the three years they have been in use.

In preparing the shells for new cots, practices diverge somewhat. But a composite operation would read somewhat like this: Clean the shells with a wire buffer. Dip the cement-laden cot in water and press it onto the shell. Let stand overnight and buff.

Again it should be pointed out that the mills diverge in the above approach. Some plants buff almost immediately after the cots are pressed on. Some wait 24 hours. Some mills boil the shells in a de-

After the meeting, mill men examined Georgia Tech's granular top card that, for a modest service fee, is available as a research instrument to those wishing "impartial" results of their own fiber performances. A. French Textile School personnel conduct the tests.

tergent. Some do not touch the shell to clean it "unless the shell needs it." One firm calenders the rolls before buffing them.

Gear Tester. The gear tester, which permits gear run-out to be measured, earns its keep. Of the seven plants entering this discussion, one has had no experience, one is in the process of making tests, and five report that it is an effective quality-control tool.

Mill C has discarded all gears that exceeded 7/1000" run-out; *Mill O* has seen an across-the-board improvement but reports the greatest single advance to be in increased card sliver evenness; *Mill P* feels that the saving on gears alone is worth the investment—added yarn quality is then a bonus.

When queried as to the cost per card of conduction run-out tests, one representative replied: "75 cents for an H & B card; 25 to 30 cents for a S-L card."

Relative Humidity. Spinning being operated with vacuum scavenger systems by and large require less humidity than does spinning operating with lap sticks. The difference is explained by a mill man who said, "Vacuum cleaning gets the humidity down to the yarn where the humidity is needed."

Table 4 lists the humidity and temperature values each reporting plant considers ideal—to keep the roll laps subdued.

While *Table* 4 does list the upper humidity values each firm considers the limit just preceeding excessive roll lapping, the 55% listed opposite *Mill A* represents a compromise by that firm, which entered the remark: "We have had the experience of running relatives [relative humidity] as high as 72% without getting into trouble with roller laps."

For the relative humidities and temperatures being used in spooling and warping, see *Table* 5.

Ten Years of Broad Woven Fabrics—1950-1959

■ PRODUCTION of cotton, man-made fiber, wool, and silk textiles in the United States in 1959 totaled 12,351,857,000 linear yards, according to a summary of apparel fiber textiles shown in the accompanying "Ten Years of Broad Woven Fabrics" by The Association of Cotton Textile Merchants of New York.

On a basis of population the figures reflect a gain of 2.94 yards per caput at 69.74 from the low point reached in 1958, but the past two years remain the lowest in the history of this series going back in government figures to 1941. Average per caput production was 77.24 yards for the decade 1949-1958. Production in pre-war 1939 was 76.66 yards per caput.

Increases in production for 1959 over 1958 were shown in the total production of cotton broad woven goods which at 9,559,375,000 linear yards made the best showing for any year since the peak post-war year of 1956 when 10,317,071,000 yards were made. The gain from 1958 was 586,279,000 yards or 6.5 per cent. Every major division of cotton goods recorded increases, and two of the eight divisions—fine cotton fabrics with 1,610,234,000, and towels, towelings, and dish cloths with 570,329,000—set new all-time highs for the life of

Continued on page 196

	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
				THOUSANDS OF LINEAR YARDS						PRELIMINARY
COTTON BROAD WOVEN GOODS (except tire fabrics) TOTAL PRODUCTION	10,012,686	10,135,969	9,514,732	10,203,037	9,890,948	10,171,062	10,317,071	9,533,764	8,973,096	9,559,375
Duck and allied fabrics	248,880	362,777	366,081	263,223	239,819	242,087	255,471	219,692	200,154	221,508
Sheeting and allied coarse and medium yarn fabrics	2,736,691	2,836,253	2,416,939	2,536,855	2,493,582	2,585,656	2,638,616	2,479,019	2,286,185	2,560,571
Print cloth yarn fabrics	3,683,449	3,709,429	3,638,293	3,956,483	4,039,169	3,967,718	3,888,122	3,736,448	3,339,005	3,367,949
Colored yarn fabrics	860,318	779,053	827,362	862,816	738,617	698,691	625,328	533,051	484,401	510,858
Fine cotton fabrics	1,218,381	1,233,133	1,112,721	1,307,928	1,244,336	1,376,313	1,517,982	1,357,002	1,453,437	1,610,234
Napped fabrics, blankets, blanketing	398,614	408,682	297,790	290,316	233,143	240,600	240,844	209,200	195,750	206,058
Towels, towelings and dish cloths	453,662	421,607	428,338	475,086	435,088	302,298	562,638	540,739	534,705	570,329
Other woven cotton fabrics, specialties	432,681	385,035	427,188	490,330	447,194	557,499	588,070	458,613	479,459	511,868
RAYON AND ACETATE BROAD WOVEN FABRICS, TOTAL	2,406,205	2,083,836	1,851,673	1,903,233	1,730,904	1,928,162	1,626,047	1,463,894	1,654,030	1,595,773
100 per cent filament rayon and/or acetate fabrics	1,601,282	1,296,967	986,702	1,051,844	848,310	887,373	790,113	691,188	703,727	668,816
100 per cent spun rayon and/or acetate fabrics	434,085	407,601	407,273	442,129	445,485	528,185	351,474	281,820	419,487	308,068
Combination filament and spun rayon and/or acetate fabrics	202,450	190,238	247,074	138,594	118,876	109,184	107,776	107,192	121,811	121,422
Pile, upholstery, drapery, tapestry and tie fabrics	37,763	36,496	50,119	63,442	87,906	118,407	114,889	144,413	157,897	186,571
All other rayon and/or acetate mixtures including blanketing	130,625	152,534	180,505	207,224	230,327	285,013	261,795	239,281	251,108	310,896
OTHER MAN MADE FIBER FABRICS*	171,974	265,575	400,634	463,954	558,631	629,197	602,229	783,220	694,217	846,760
WOOLEN AND WORSTED WOVEN GOODS	470,513	375,400	351,359	335,914	284,231	317,586	324,358	294,490	270,182	305,855
SILK, PART SILK, OTHER FABRICS†	29,338	26,461	41,998	38,065	53,325	69,872	61,377	42,190	35,485	44,094
TOTAL PRODUCTION OF BROAD WOVEN GOODS (except tire cord and fabric)	13,090,716	12,887,241	12,160,396	12,944,203	12,518,039	13,115,879	12,931,082	12,117,558	11,627,010	12,351,857
				THOUSANDS OF POUNDS						
TIRE CORD AND FABRICS, TOTAL	523,033	603,913	530,980	521,007	418,338	524,354	449,093	448,700	390,492	471,077
Cotton tire cord and fabrics	226,050	299,160	139,001	73,216	59,890	68,261	51,419	42,281	34,425	36,058
Man-made tire cords and fabrics	296,983	314,753	391,979	447,791	358,448	456,093	397,674	406,419	356,067	435,019

*Includes nylon, acrylic, polyester, Saran and polyethylene, and textile glass fiber fabrics and mixtures.

†Silk and silk mixtures only through 1953; includes paper yarn and miscellaneous as follows: 1954, 10,917; 1955, 27,165; 1956, 20,296; 1957, 14,265; 1958, 14,525; 1959, 16,853. Data from 1956 is not exactly comparable with earlier years.

ALABAMA

General Chairman **Wendell Morriss** and the surprise honor guest of the day, **Miss Mildred Nelson,** 1960 Alabama Maid of Cotton and quite a witty speaker in her own right. Miss Nelson sat wonderingly through the slashing discussions as for the first time she heard men struggle with the age-old feminine chore of "starching."

These mill men discussed

- ☐ *Starch conversion*
- ☐ *Over-waxing*
- ☐ *Pick-up variation*
- ☐ *No. 14 check control*
- ☐ *High-density pickers*
- ☐ *Linkage parallels*
- ☐ *Nonleather binder covers*

Staff report

ON THE morning of 7 May Alabama Textile Operating Executives met in Thach Auditorium on the campus of Auburn University, Auburn, and by 9:30 a.m. had settled into their seats for their annual discussions of slashing and weaving problems.

General Chairman *Wendell Morriss* called the meeting to order, *Lester Sayers* gave the invocation, and the meeting was under way. *Charlie Harris* led the slashing discussions; *Virgil Redden*, the weaving discussions.

SLASHING

*Starch Converters.** There is little experience to relate, with two mills doing all the reporting. But the results are significant.

At *Mill F* there has been no noticeable change in shedding with the new system as long as paste compound is used—a switch to a liquid compound did bring about an increase. Hard size is eliminated. Weaving efficiency is unchanged.

Steam consumption has not been accurately measured, but there is evidence of an increase; viscosity measurements have been very uniform; and size content variations remain at a minimum from selvage to selvage and from beam to beam. Squeeze roll pressures are adjusted for differences in pick-up.

A spokesman for the second plant using the system substantiated *Mill F's* findings that liquid compounds bring on additional shedding. He was asked:

"How do you control the amount of size added?"

"By adjusting the formula."

"Are you bothered with roll marks?"

"Not with the rolls we use."

"How do you justify the expense of installing the system?"

"Initially by the saving in starch prices, thick boiling vs. thin boiling. We have an automatic system of size preparation and anticipate added savings in labor."

He continued, "Our automatic slurry system helps us keep our viscosity 'perfect.' Furthermore, we can close for the weekend without dumping any size. We merely cut off the heat and leave the agitators running. On Monday morning the viscosity is still perfect."

"Does the system help in the weave room?"

"It seems to be showing better and better in our broadcloth."

This spokesman, in a closing statement, added that his firm is awaiting delivery on a pump that will handle either liquid or paste compounds.

Mill F recalled using a powder compound which was added to the slurry, but used it without any good results. The compounds normally are metered into the size stream at the flash chamber where the pressure is suddenly dropped to atmospheric.

Over-waxing on Slashers. Two mills apply wax at the slashers, and one plant applies it to the dry yarn while the second plant applies it while the yarn is still wet.

At *Mill B*, where the wax is applied to the dry yarn, the waxed warps present about 20 per cent fewer stops than do the untreated warps, loom efficiency is about two per cent higher, machinery stays cleaner and is less difficult to blow or wipe off, and the floors appear much cleaner from the wax that finally sheds onto them.

"How much of the wax do you apply?"

"About 17/100 of one per cent." The spokesman then added: "If

*Equipment developed and sold by A. E. Staley Mfg. Co. for converting thick boiling starch to thin boiling.—The Editors.

SLASHING-WEAVING FORUM

the application exceeds 2/10 of one per cent, stop motions tend to gum up."

"How do you apply it?"

"We use a high-melting point wax, melt it in a trough mounted between the last cylinder and the lease rods, and transfer it from the trough to the yarn by rotating a roll slowly in the wax and against the yarn sheet. The roll speed is synchronized with the slasher speed, so the quantity applied does not vary just because the slasher slows down or speeds up."

"What does this operation cost?"

"We spend about $4.00 for every 6000 pounds of yarn treated."

"To what do you attribute the efficiency increase?"

"To fewer warp stops and to the hygroscopic property of the wax."

"Have you changed the size formula?"

"No."

"Do you actually use less humidity where the wax is present?"

"Yes, as much as two per cent less. Our humidity is approximately 87 per cent in the area of the waxed yarn."

"How much fat do you use in your size mix?"

"Five per cent based on weight of starch."

"What effect does prolonged storage, say two or three months, have on the waxed warps?"

"We have no experience with that."

The over-waxing being done at *Mill H* is still being evaluated, so, as the plant representative said: "We are not in position to draw any conclusions."

The wax is applied to the wet yarn as it passes from the size box to the first cylinder. The applicator roll speed is set or changed through a gear train, and the firm considers the method of application satisfactory.

Size Pick-Up Variations Due to Speed. The question was phrased: On high speed slashers, what is variation of size pick-up from running speed to creep speed? And it brought about as many different answers as there were mills involved. Two of them are unusually interesting, because they appear exact opposites:

Using multican slashers made by the same firm, *Mills B* and *D* went in different directions—*Mill B* (West Point size box) finishes its size (60 per cent thin boiling starch with 40 per cent modified pearl starch) at 12 ounces of starch per gallon and has a pick-up of 12 per cent. *Mill D* (Griffin size box) finishes its size to 14.3 ounces of starch per gallon. The result? *Mill B* has 12.5 per cent pick-up at 25 ypm; *Mill D* saw the pick-up drop two per cent at "creep" speed.

To be more specific, *Mill B* used a speed of 105 ypm as a base for the 12 per cent pick-up figure, found the pick-up at 25 ypm to be 12.5 per cent, then removed pneumatic pressure and tested with only dead weight on the rolls at 25 ypm. The result? 14.5 per cent pick-up!

Roll pressure at *Mill D* is varied automatically through a system of electric and pneumatic controls that reduce roll pressures as slashing reaches a preset speed. By using the system, the plant obtains the results in *Table 1.*

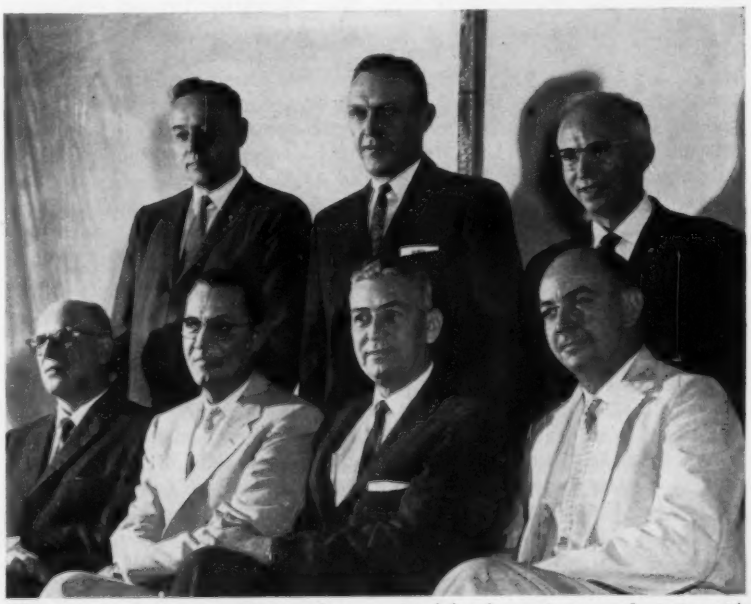
TABLE 1

Size Pick-Up Experienced at Several Speeds at Mill D

Running speed — 30 psi	Creep speed — 15 psi
13.93	13.79
13.84	13.83
13.47	13.98

WEAVING

Check Strap Performance. Three plants report experience with the No. 14 check control, and two of the mills accept it as a worthy control measure. The third plant



Officers and executive committee members appointed for the coming year: Beginning with front row (l to r): **W. N. Scroggins,** vice-general chairman; **Lester D. Sayers,** general chairman; **T. B. Faubus,** executive committee; **J. H. Blankenship,** executive committee; **George M. Willingham,** executive committee; **Charlie Harris,** executive committee; and **Cleveland L. Adams,** secretary-treasurer.

is not convinced that it is of much value.

In one instance the check is reported "effective in checking the shuttle;" in another instance it is giving improved boxing on looms operating at speeds greater than 130 ppm, with no experience being had at slower speeds; in the third situation management reports not being impressed with performance on the 12 trial units.

One plant has had no difficulty with undue sensitivity to humidity and temperature changes; a second unit states flatly that the control is not as sensitive to those influences as is the conventional check control; and the third plant reports " . . . a greater amount of leather to react to humidity and temperature."

In one instance, fixers have had no difficulty adjusting and keeping it adjusted; in another situation, fixers "like and adapt themselves to this check control satisfactorily." (The firm adds that the check requires more adjusting time than does the conventional check.)

The third firm states briefly: "Fixers do not like this check."

Supply cost is reported "unknown," "higher," and "slightly higher" with the firm making the latter report stating further that the detail cost difference is unknown.

Strap life at *Mill I* is 1504 hours on 90" XP-2 looms running at 142 ppm; at *Mill D* the life is unknown, but it exceeds that of the conventional strap; and at *Mill G* it is about equal to the life of the conventional strap.

In essence, one would assume from the reports that where the check control is received well very little if anything is wrong with it; where it is not received well there is little if anything right with it.

High-Density Pickers. The consensus seems that the pickers offer longer life, although they are so new to the industry that many plants have not arrived at a life figure. And being new, the pickers draw the expected comments of men who are giving them their baptism of fire:

"Some longer life indicated, but fixers do not like them because of the close tolerances that must be used."

"We tried some on X-2 looms at a speed of 191 ppm, and we couldn't box the shuttles properly. We put the same pickers on 200 Model E looms running 171 ppm and they box all right."

"We have 48 looms equipped with double-end high density pickers that have been running eight months. We have replaced 10 broken pickers, and we average bushing the pickers every three months. We run three 40-hour shifts (50" C&K terry looms running 154 ppm) and we are in the process of equipping more looms with the pickers."

"We . . . think it [picker life] will be double that of the fabric picker."

"The pickers are satisfactory but we must replace the nylon bushings every few weeks."

The preceding comments are not to be accepted as proof of failure of high-density pickers, for some of the mill men making the comments prefer them to conventional pickers. In six out of eight cases, longer picker life already had been measured or was suggested from picker condition at the time the report was drawn up.

Linkage Parallels. Six of the nine mills to which this topic was submitted report "no experience." The others give very favorable returns.

One plant has operated a single installation for three years without any maintenance.

A second plant has 313 looms so equipped—288 on 60" X-2 looms running 160 ppm; 25 on 46" X-2 looms running 184 ppm—and, while not having increased loom speeds, lists six advantages observed from their use: (1) lowered supply cost; (2) lowered maintenance requirements; (3) increased shuttle and picker life; (4) added picking smoothness; (5) decreased down time for maintenance; and (6) increased ease of picker paralleling. The firm assigns 77 looms per fixer; has been operating the parallels on 60" looms more than a year.

The third plant experienced an improvement in shuttle boxing (from truer shuttle flight), an increase in picker stick life, an increase in power control, and was able to increase the speed on 81" Model L's.

Nonleather Binder Materials. Seems that the leather binder will be here for some time to come, for only two of the plants report using a satisfactory binder material other than leather. One of those plants is using plastic shuttles.

Technical developments *(from page 79)*

itron," a combination of nitrocellulose with chlorinated polyvinyl chloride. The "Ftorlon" is said to have better mechanical properties than Du Pont's "Teflon."

MACHINERY AND PROCESSES

Blending Textured Yarns. French "Novlan" process disclosed as a technique which permits the drafting of a roving of staple fibers between two supporting threads of synthetic textured filaments. Joseph Bancroft's "Textralized" yarns selected for texturing nylon. Claim evenness, lightness and strength, bulk-covering power, stability to normal washing, softness, comfort, and economy.

High-Speed False Twister. It has been reported that the Leesona Corp. recently had private showings of their new F553 machine with a rated speed of 350,000 rpm. This is said to be about twice that of any existing commercial unit.

Wrinkle Recovery. Developed along the lines of the Monsanto Wrinkle Recovery Tester, a working model equipped with a photoelectric cell as a sensing device shows promise of permitting more rapid testing at substantial savings in cost.

WATER

. . . . a priceless heritage that every man must share equitably with his brother in a spirit of gratitude for its availability and cooperation in its use

by John P. Baum
Vice-President
J. P. Stevens & Co., Inc.

IT IS well recognized that water is of major importance to industry. It is used as a solvent in some industries, as a raw material in others. In many industries, water in great volume is an essential manufacturing or processing material. It is used for transportation, for the generation of steam, for condensing and cooling, for cleansing, for waste treatment and disposal, and for fire protection.

I have firsthand knowledge as to the importance of water to the textile industry. The availability as to quantity and quality was an important factor in determining the location of my company's first textile plant in Georgia. Even so, the amount of water used in textile manufacturing is much smaller than in many other major industries. For example, according to a U. S. Census Bureau survey, the textile industry requires 0.57 million gallons annually per employee. The paper industry and allied products require an amount almost ten times greater than the textile industry, or 5.2 million gallons annually per employee.

The lumber industry requires 1.58 million gallons annually per employee. Food and kindred products, 0.92 million gallons annually per employee; stone, glass, and clay industry, 0.86 million gallons per employee. Requirement by all manufacturing industries averages 1.5 million gallons annually per employee, which is almost three times as much as is required by the textile industry.

The usage of water in textiles also has rather wide limits. In a plain spinning mill, practically no water is used for processing unless it is used in the form of steam. However, in a complete processing woolen or worsted mill, an average quantity of approximately 100 gallons of water per pound of finished cloth is required.

After some of our heavy rainfalls, small streams and rivers may contain water carrying 2,000-4,000 ppm in turbidity. Of course this turbidity represents loss of topsoil or subsoil from our open fields and ditches. For use in finishing textile products, such turbidity must be reduced in treatment plants to a maximum of 4 or 5 ppm, preferably not more than 1 or 2 ppm. This clarification is secured by proper chemical treatment and coagulation, settling, and filtration of the water to be used in process.

Process waters for textile plants are commonly taken from rivers or lakes, though water is sometimes pumped from wells. Well water in the Piedmont or higher sections is usually hard and must be softened. Therefore a good source of river or lake water is preferable, and such supplies are sought when a new plant is being located.

Georgia has an annual rainfall of 61″ - 71″ in North Georgia and 45″ - 53″ in Central and South Georgia. An average figure is probably 50″ per year. This compares to the annual rainfall of 68″ in Alabama and 7″ in Arizona, which represent the extremes in our nation. Georgia's 50″ rainfall amounts to approximately 50 trillion gallons of water over the state in the average year.

In general, over the past 60 years the requirements for industrial water have increased 600%, or an average of 10% per year. With the continued rapid industrialization of our state, I would expect this rate of increased demand for industrial water to persist. This means, of course, if the

present usage is taken as the base, that the industrial usage of water will increase 50% between the years 1960 and 1970. Thus industry alone, which is now requiring an estimated 1 ½ billion gallons per day, will require, at the present rate of increase, 50% more in 1970 or from 2 to 2 ½ billion gallons per day. This does not include requirements for cooling purposes in power machines or requirements for all other human services.

The annual run-off of water that will be available for all purposes in Georgia will doubtless continue to average 20 trillion gallons per year, or about 60 billion gallons per day. However, we will be subject to dry years and droughts that may reduce the flow of water in our streams at any one period to 10% of the average. Therefore, at such time the requirement of 2 billion gallons per day for strictly industrial purposes must be taken from the total of 6 billion gallons available for all human needs. This clearly points out that any reasonable steps we can take to conserve and store water will be of value.

The quality of water for industry varies widely. In some sections of the United States steel manufacturers, for instance, use the effluent from waste treatment plants. Still many industries require water of quality equal to the best city water or better. In such cases it must be clear, colorless, tasteless, soft, free from iron and manganese, hydrogen sulfide and organic matter, and of biological quality fully equal to city drinking water.

Waste Treatment. Of recent years, particularly in dry years, there has been considerable agitation calling for the treatment of industrial waste waters that hitherto have been discharged rather indiscriminately into our streams. It is possible, of course, to reuse some industrial waters, such as cooling waters, without special treatment. However, most industrial wastes must be treated carefully before being reused. The two methods of treatment generally accepted are (1) the biological method whereby the wastes are settled and treated in trickling filters in one or more stages, or (2) the chemical treatment method where coagulation is induced by the proper chemicals and settling is done in clarification chambers and in lagoons. Complete purification by either method is seldom accomplished.

A casual survey of industry's probable need for water over the next ten years therefore justifies the concern we all must feel for providing an adequate supply. We are rapidly becoming an industrialized state, and progress in that direction cannot and should not be denied. Coupled with the industrial demand is the public drive for more domestic water and purer water. There is no definite limitation to the increasing need for good water, and it well behooves us to proceed on a program of water conservation and use that will not only bring about larger payrolls but also help build healthier citizens for our great state.

As our state grows, as our cities increase in number and size, as our industrial economy expands, our water requirements will increase proportionately and our water problems will become more complex and more difficult to solve.

To supplement the purposes of laws to control the use of our water resources there must be education and there must be tolerance and cooperation. The people of our state must be informed about the sources and supplies of water that are available to them. They must know about the uses of water and about the quantities of water that are needed by the various segments of our society. They must be educated in the effective means of conserving our water resources and in making certain that water is utilized beneficially and that it is not wantonly wasted.

And there must be tolerance and consideration of others as we endeavor to share in the use of this essential natural resource, which is the common property of all. Water is the exclusive possession of no individual and of no one group. Water is not man-made. It is a product of nature that serves us all alike.

In this matter of water treatment we must, however, be guided by a commonsense rule of reason. Our individual taxpayers are already heavily burdened to meet the costs of city, county, state, and federal governments. Our industries are similarly taxed. To pass arbitrary laws and regulations which are unduly burdensome to the individual, municipality, or business firm in an attempt to render all streams crystal clear and 99 44/100% pure is both wasteful and capricious. Streams, unless overloaded, have the fortunate ability to regenerate themselves. It behooves us, in the interest of the over-all economy, to capitalize on this fact.

It was my privilege to serve for a period of several years on a commission whose responsibility it was to recommend legislation dealing with this matter of stream pollution. After a great deal of study, recommendations were finally made to the legislature. These were adopted. In my opinion our present laws are fair and constructive. I believe they will safeguard the health of our people and at the same time provide the means whereby abuses can be corrected. I trust they will be given a thorough trial before any changes are proposed; otherwise, in my opinion, our taxpayers and industry, which means the public, will be still further burdened.

Man has tried—and has failed, thus far—to alter or to control or to influence the water-producing functions of nature. Our water comes to us only through the wisdom and the beneficence of a Divine Providence who knows our needs, individually and collectively, and who supplies those needs in accordance with his cosmic plan for our universe.

Water is a priceless heritage, without which no living creature can long survive. It is a natural resource that every man must share equitably with his brother in a spirit of gratitude for its availability and cooperation in its use.

How well we fulfill our individual responsibilities for the prudent and careful use of that common property for the greatest good of the greatest number, will be a measure of our stewardship as citizens and as trustees of one of the most valuable gifts that our Creator has bestowed upon us.

NO MORE OVERDRIED COTTON!

Now one of the cotton spinner's dreams can come true. A new seed cotton dryer has been developed which makes overdrying impossible

by Alden Richards
Exclusive

COTTON SPINNERS are painfully aware of the damage done to cotton by overdrying at the gins. Hence, they like we will be glad to hear that it is now possible to dry cotton properly for good ginning with proper control of the drying process so as to eliminate the possibility of overdrying and damaging the cotton before it reaches the gin.

When told of this new development, the president of a large carded cotton yarn mill replied:

"As a mill man it delights me to know that the gin people realize that they are ruining cotton and the market for its products.

"Not that the ginners should receive the blame, as the problem is tied to the pricing policies of the United States Government, about which none of us can do much as an individual; but perhaps as the total cotton industry we may some day be able to arrive at some better means of setting the true value on a bale of cotton. In the meantime, it is comforting to know that an effort is being made to achieve the results needed today with less damage to the cotton fiber."

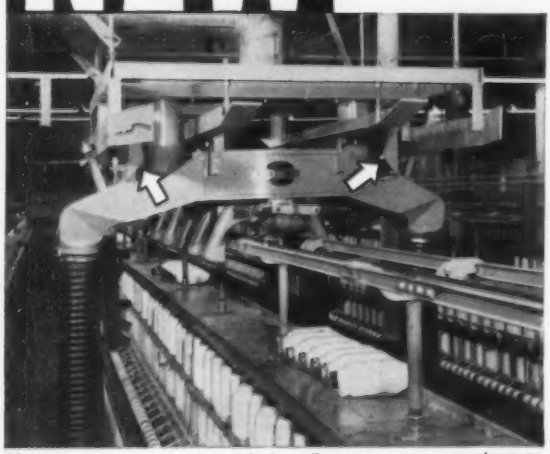
Results of Overdrying. As most spinners know, this overheating not only has a directly damaging effect on the cotton fibers, but these overdried fibers are brittle and will break easier in the lint cleaners which are now considered a part of the normal ginning process. Furthermore, this overdrying makes the motes and leaf trash very brittle so that it is ground up finer in going through the lint cleaners.

How Typical Dryer Works. A cross-sectional view of the typical cotton gin dryer is shown in *Figure 1* [page 137]. The seed cotton directly from the truck is blown into the top of this dryer by very hot air from a gas or oil burner. This air, carrying the cotton, worms its way down to the bottom of the dryer where the dried cotton is discharged into a pipe going to the overhead cleaners prior to ginning.

The cotton going into this dryer

NEW

Keeps yarn cleaner
Keeps floor cleaner
Boosts profits



Stationary vacuum nozzles strip traveling vacuum screen clean as traveling unit passes beneath them. Doors over screen open and shut automatically when unit passes beneath stationary nozzles.

Cleans best because:

1 Cleans upper frame, underframe, ceiling and floor.
2 Special air outlets are cut in the cleaner boots at the time of installation so air blast is where you need it!
3 Air reaches all parts of the frame including back guides, weights, idlers and samsons.
4 Necessary amount of air to clean any area can be delivered to that area.
5 Total amount of air is easily controlled by adjustable air intake.
6 Unit can be changed from closed loop operation to reversing type in minutes.
7 Four adjustable and directional creel cleaning outlets will clean all types of creels.
8 This unit cleans 20 or more frames efficiently.
9 Bolted track and standard curves make revised track layout easy.
10 Ceiling cleaning unit (over 1 horse power) will clean ceilings as far as 16 ft. away.

Write for information with all the facts about safety, ease of maintenance, etc.

AMERICAN MONORAIL

Engineered Automatic Cleaning and Handling Systems

1106 EAST 200th STREET CLEVELAND 17, OHIO

MEMBER OF AMERICAN TEXTILE MACHINERY ASSOCIATION

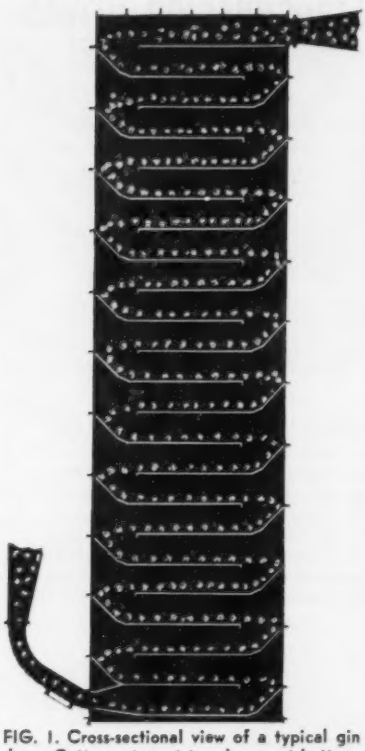


FIG. 1. Cross-sectional view of a typical gin dryer. Cotton enters at top, leaves at bottom.

can have a highly variable moisture content, and sometimes it is quite wet so that a very large amount of moisture has to be evaporated. When there is a large amount of moisture present, the evaporation in the top of this sort of dryer very quickly drops the temperature of the hot air; and as the evaporation proceeds, the temperature continues to fall. If this temperature falls much below 150 F at the bottom of the dryer, it will drop enough between the dryer and the gin to cause the cotton to pick up moisture again from the air after having lost it in the dryer.

In order to get an exhaust temperature of about 150 F, it is therefore sometimes necessary to have an incoming temperature of 400 to 450 F, and this is what is ruinous to the cotton. This very hot, dry air almost immediately dries out the outer part of each lock of cotton and damages the fiber severely during the time required to dry the inner part of the lock down next to the seed.

Obviously, a dryer which could operate with air having a lower incoming temperature would do less damage to the cotton, and if this temperature could be lowered to the point where it could do no damage to the cotton, ideal drying would result. This is the principle employed in textile mill dryers which operate by steam and which do not develop temperatures capable of injuring cotton.

Some of the original gin dryers were steam operated and could not hurt the cotton, but the steam-operated dryer was too expensive to produce and operate, and it was soon supplanted by these gas- or oil-fired dryers.

How New Dryer Works. The new development in gin drying is a modification of the dryer to permit maintaining the desired uniform output temperature with an incoming temperature so low as not to be injurious. This modification is shown in *Figure 2*, and its essential feature is the by-pass which recirculates the air from the bottom back into the top.

In the older type dryer about 4000 cfm of air would be introduced from the burner, and this same 4000 feet would be exhausted with the dried cotton. In the new dryer 4000 cfm are introduced as before, but the by-pass blows 12,000 feet into the intake manifold of the dryer where it is mingled with the incoming high temperature air to lower the temperature to about 175 F. There is, consequently, a spread of only about 50 degrees between the temperature in the top of the dryer and in the bottom, and this makes possible the non-injurious drying.

Whereas in the old style dryer only 4000 cfm of air was blown through the machine, in the new style dryer there would be about 16,000 cfm and this brings every lock of cotton in more intimate contact with more air.

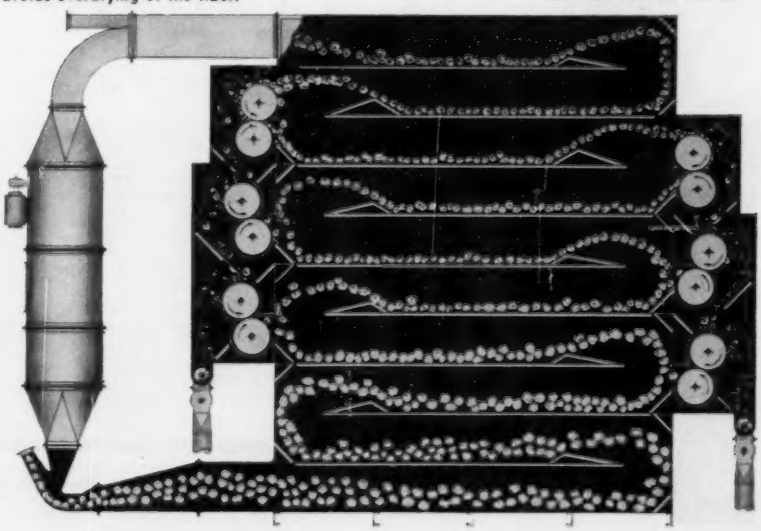
Near the top of the dryer there is a cleaning and doffing cylinder. The cleaning cylinder picks up the cotton and throws off bolls, sticks, and other heavy foreign matter, and the doffing cylinder then doffs the cleaned stock back into the air stream.

At the end of this same passageway there is a second similar set of cleaning and doffing cylinders. The lower sets of cylinders are reclaimer units to separate from the bolls that proportion of the stock which has been thrown off by the top cylinders and which contains good cotton. These cleaning cylinders also have the effect of very thoroughly separating any locks of cotton which have become matted together before reaching the dryer.

As the cotton goes through the dryer and loses moisture, each lock becomes fluffier and the air can penetrate it more readily.

These cleaning cylinders are very efficient and replace a good deal of the overhead cleaning machinery previously used in gins. This cleaning is done entirely by centrifugal force and the cotton is

FIG. 2. Cross-sectional view of the recently developed seed cotton dryer, design of which avoids overdrying of the fiber. LUMMUS COTTON GIN CO.



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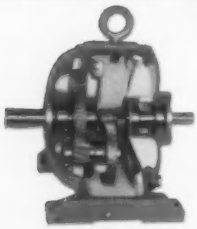

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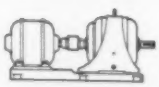

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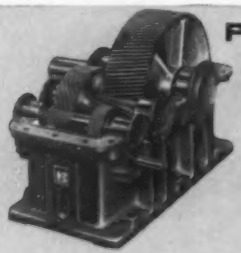

Standard Housing

- 62 Standard Sizes • 9 Shaft Arrangements
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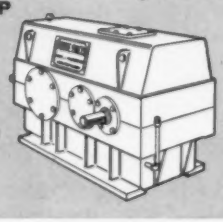
All Steel Housing



Parallel Shaft Drives are designed for applications with heavy shock loads, high overhung loads—or installations requiring multiple output shafts. Ruggedly built to deliver trouble-free performance under most severe conditions. Rated to AGMA Standards. Write for Catalog MPB.

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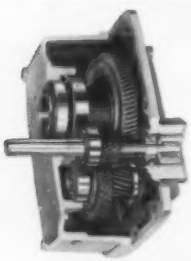

- 45 Stock Combinations
- Capacities From ¼ to 40 HP
- Output Speeds: 9 to 420 RPM

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Duti-Rated Lifetime Gearing in Foote Bros. Shaft Mounted Drives transmits more horsepower—size-for-size than any other units to make them more economical, more efficient, in any application. Designed for quick, easy mounting. Rated to AGMA Standards. Write for Catalog SMB.

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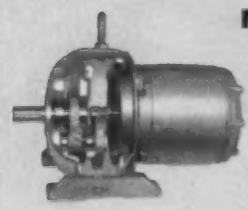

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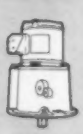

Vertical Gearmotor

Vertical Line-O-Motor

Stronger, tougher Duti-Rated Gearing in Foote Bros. Motorized Drives guarantees smoother operation, longer life. Foote Bros.—Louis Allis Gearmotors available with any type of motor to meet your needs. Line-O-Motor Drives permit you to use any NEMA Frame motor. Rated to AGMA Standards. Write for Catalog MRA.

FOOTE BROS. GEAR AND MACHINE CORPORATION

POWER TRANSMISSION DRIVES 4591 South Western Boulevard, Chicago 9, Illinois

not beaten or scraped over perforated screens or grid bars. Furthermore, by taking this trash out near the top of the dryer, it is removed before it gets dried and brittle, as was the case in the old style dryer when this trash had to be taken out after drying when it was much easier to break up than if it was knocked out before it got brittle.

This method of cleaning, therefore, removes the heavy trash without putting a lot of fine, ground-up stuff back into the cotton.

This system of heavy recirculation of the air makes very accurate control of temperature possible. Such control is not possible with the old style dryers, because the moisture content of the cotton coming from the truck is too variable. Whenever the moisture increases suddenly, there is a rapid drop in temperature, but perhaps seconds later the percentage of moisture decreases as cotton is drawn from the truck, and there is so much difference between the moisture content from one truck to another, and from different layers in the same truck, that it has not been practical to get any accurate control over the temperature of the incoming air. The thermostatic control almost necessarily has to be operated by the exhausted air, since the main problem is to keep this at the proper level for good ginning.

In the new dryer, it is possible to get a very accurate control of the air temperature because the drying is not done almost entirely with high temperature, but with high exposure to warm air of controlled temperature. Since about four times as much air is going through the dryer as previously, the introduction of a sudden influx of very wet cotton does not have the same effect as it does in the old dryer.

Any textile mill man who has operated cotton mill dryers can readily appreciate the advantages of this system, and can see why it can dry cotton without any possibility of overheating.

While saw type lint cleaners are always going to be injurious and make pepper trash and quantities of seed coating fragments, the injury is somewhat minimized by presenting to these cleaners cotton properly dried.

Numerous tests have shown that cotton will gin properly and go through the lint cleaners with a minimum of damage if it contains about five per cent regain; but as the regain drops much below five per cent, the cotton is increasingly damaged in the ginning process as the regain drops. Heavily overdried cotton with around two per cent moisture can be practically ruined in the gin.

That it is now possible to eliminate all of these troubles directly due to overdrying at the gin should be good news to the cotton spinners.

Simplify mill operation with the tex yarn numbering system

■ IN RECOMMENDING mill adoption of the tex single system of numbering yarns from all types of fibers (TI for June, 1960, p. 77), the American Society for Testing Materials listed the following benefits of it:

1. The various yarn systems now in use with different fibers—for example, English cotton counts, French cotton counts, metric counts, Yorkshire woolen skeins, American woolen runs, English worsted counts—will all be replaced with the tex system, eliminating time spent in converting units from one system to the other and avoiding mistakes that occur when technicians are forced to think in unfamiliar units.

2. Efficiency in mills spinning yarns from any fiber will be increased. Picker laps, slivers, rovings, and yarns will all be numbered in the same units, thus facilitating the calculation of drafts at all stages of spinning and eliminating confusion due to changing systems between laps and slivers, slivers and rovings, tops and gills, rovings and yarns.

3. Operating procedures will be simplified in mills simultaneously spinning yarns from fibers numbered in different systems—for example, wool and man-made fibers on both the worsted and woolen systems. Sales of these products to different customers will also be simplified.

4. The buying and selling of yarns that must meet specifications given in different traditional numbering systems will be simplified by eliminating the time spent in converting and checking results.

5. Efficiency in cost accounting and inventory control will be increased, since all yarns, regardless of the fiber used, will be based on the same yarn numbering system.

6. Fabric design work will be simplified, since the same amount of yarn, that is, the same length of yarn of a given number or count, will be needed to make the same weight of fabric, regardless of the fibers involved.

7. Calculation of the resultant count of all plied yarns that are numbered in indirect numbering systems will be much easier, since with tex numbers the equivalent single number can be calculated by simple addition.

8. Efficiency of quality control and cost comparisons will be improved, since all derived or calculated yarn properties such as breaking tenacity or lea product will be in the same units regardless of fiber used.

9. It will be easier to interpret and use the findings of textile research workers published anywhere.

10. Any spinning or blend study involving the number of fibers in a yarn will be easier to make, since the yarn and the fibers used will both be numbered in the same or closely related systems.

11. The time spent in technical textile schools teaching and practicing the use of various yarn numbering systems will be eventually eliminated. This time will be available for teaching other subjects.

12. The United States textile industry will avoid being placed at a further disadvantage in production costs with respect to competition from foreign countries who are expected to adopt the tex yarn numbering system fairly soon.

13. In addition to the ultimate lower costs resulting from all these increased efficiencies, each textile scientist or executive will have the personal satisfaction of promoting the use of the universal yarn numbering system in his own company and trade association and of knowing that, at the cost of some relatively transient personal difficulty, he is contributing to the advancement of the textile industry for the benefit of all future generations.

New Economies in Flat-Belt Operation

Tanastic, the nylon core leather belting by Rhoads, makes no maintenance demands. Will not slip because it is stretch-free. Maintains tension, runs straight and true. Tanastic starts up without slipping, and runs at highest speeds required in mill operation.

Ask a Rhoads belt-drive engineer about Tanastic nylon core leather belting, Texalon nylon core snythetic belting, or famous Rhoads Tannate leather belting. Literature on request. Address Engineering Department, J. E. Rhoads & Sons, Wilmington 99, Delaware.

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KNITTING SECTION

Weld and Save

Some worn parts of a circular knitter can be restored by welding and grinding to shape, and used longer than the original parts

by Don Numan
Exclusive

ONE OF THE seamless-mill "costs" that get into the "upper" brackets very easily is repair parts. Knitting machines are one big item, but don't forget there are quite a few other machines scattered all over the mill which must be kept running. So when it comes to repair parts for any machine in the mill remember the two R's—Renew or Repair. There is no other way.

One of the easiest and most economical ways to repair worn or broken parts is by welding. In this article we shall discuss welding some well-known parts for Banner S. C. O. P. machines.

The sketches show a new S. D. 1157 operating lever extension, (Fig. 1) and the same part with ⅛" worn off the portion that is subjected to constant wear (Fig. 2). Fig. 3 shows a new S. D. 1083 jack cam shog lever extension, and Fig. 4 shows the same part with ¼" worn off the lifting heel.

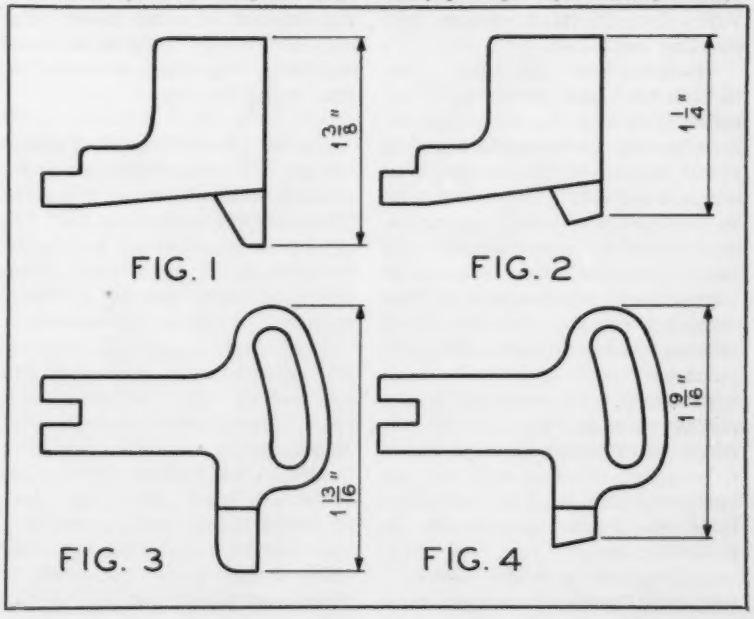
Item One, the operating lever extension, costs $2.50 new, and Item Two, jack cam shog lever extension, costs $5.00 new. When machines have been running around the clock (five days, three shifts) for several years and these parts begin requiring replacing in lots of a dozen of each kind per week, one will be spending considerable money by the time he has serviced fifty machines.

These two particular parts (there are more) can be built up, using a low-heat, self-hardening welding rod, allowed to cool, and then ground back to shape.

We have had excellent results with such, the life of repaired

Continued on page 196

The part in Figures 1 and 2 is a Banner SCOP operating lever extension, new and worn, respectively. Figures 3 and 4 likewise illustrate new and worn jack cam shog lever extensions for the same machine. These parts are easily restored by applying weld metal to the worn tips shown in Figures 2 and 4 and by grinding the parts to original shape.



Hosiery made of conventional 15/1 nylon. Before sitting, the model did a deep knee bend. Note the wrinkles at the knees and the ankles.

How to AGILON

The characteristics of Agilon textured yarn in women's hosiery; how it's knitted on seamless and full-fashioned machines; how it's finished and tested

AGILON stretch nylon yarn is a continuous filament nylon yarn to which torque-free elastic properties have been imparted by physical modification attained through a novel mechanical process. Available in both singles and plies, it offers a wide range of hand, varying from one of soft silkiness to any desired degree of firm or crisp texture. In multifilament yarns, it combines the softness of spun yarns with the smoothness of continuous filament yarns, while in monofilament yarns it presents a unique, but pleasing resilience.

Stockings knit with Agilon yarn in both boot and welt provide excellent two-way stretch which allows gentle, comfortable hugging to the contours of the wearer's legs without wrinkling, even under the most vigorous of body movements. The 15-denier monofilament hosiery combines the sheerness of conventional stockings with exceptional comfort, freedom from binding, beautiful satin-like appearance, and improved wear-life. When knit with 40-denier Agilon yarn in the welt, the 15-denier, 3-filament yarn produces a beautiful stocking with all the stretch attributes plus a soft silkiness previously unattainable in nylon hosiery.

Although 30- and 40-denier hose are normally sold as service weight such hosiery made of Agilon yarn is surprisingly sheer. In wear tests, 30-denier hose have been worn every day for two months without appreciable damage. All Agilon yarns may be knit without difficulty on single feed machines; while multiple carriers may be used, they are not necessary, because Agilon stretch offers the unique advantage of a torque-free single yarn which is relatively dead at the time of knitting, but develops a high degree of elasticity when scoured properly. With a moderate amount of care, these yarns may be readily knit on standard machines. Dyeability is similar to that of regular yarn.

Agilon Characteristics. Perhaps the most important question to the hosiery manufacturer today is, "What makes a stocking fit?" The answer to that question is its ability to retain its shape from morning until night and its ability to contract from stretched conditions.

In an effort to provide quantitative evidence of stretching and contracting characteristics, five types of hose were subjected to an ASTM standard scissors test (Designation No. D1058-51) at the welt and boot, each area being stretched under a ten-pound load, the load released, and the immediate contraction measured.

Hosiery tested included Agilon yarn (15-1), no torque; Agilon yarn (15-3), no torque; yarn A, high torque; yarn B, high torque; and regular nylon, no torque.

Of the five types of hose tested, stockings made of Agilon yarn have the greatest ability to stretch from and to contract to their original size; and because their original size is smaller, because of the elastic properties engineered into the yarn, the hose hugs the foot and leg and fits comfortably.

Agilon yarn may be obtained either sized or oiled, but for women's hosiery the best results are obtained from oiled yarn.

Excellent results have been obtained on both circular and fully-fashioned machinery, using the following constructions:

	Full-Fashioned	
	Ultra-Sheer	Sheer
Boot	15-d, 1 f or 3 f	20-d, 7 f
Welt	30-d, 10 f, or 40-d, 13 f	40-d, 13 f
Splice	30-d, 10 f	30-d, 10 f or 40-d, 13 f
	Circular	
Boot	15-d, 1 f or 3 f	20-d, 7 f
Welt	30-d, 10 f or 40-d, 13 f	40-d, 13 f
Heel & Toe	30-d, 10 f or 40-d, 13 f	40-d, 13 f

It is recommended that on 300- and 340-needle circular knitting machines, yarn less than 20-denier should not be used; for 370- and 400-needle machines, the denier

knit hosiery

by Ripley Edge — Exclusive

Hosiery made of Agilon 15/1 yarn. Before sitting, the model did a deep knee bend. Note the perfect fit behind the knees and at ankles.

should not be less than 15; and for 474-needle machines, 12-denier is recommended.

For looping and seaming, 2/30-denier Agilon yarn is recommended. The yarn used on 45-gauge full-fashioned machines should not be less than 20-denier; on 51- and 54-gauge machines, not less than 15-denier; and on 60- and 66-gauge machines, not less than 12-denier.

Agilon in Seamless Hosiery. There are some general procedures which should be followed to obtain maximum success on seamless machines.

The machine should be threaded up in such a way as to avoid turning the yarn through any guide by an angle of more than 60°, devices which nip the yarn so as to back up twist should be eliminated, and the dancing-weight-type of tensioner should not be used on 15-denier yarn. Guides and fingers of Heanium, AlSiMag, or Syntox are recommended to eliminate cutting.

Yarn tension should be about one gram at the finger on seamless machines.

If good control of humidity is maintained, it is possible to use a simple cap* fitted to the top of the package of yarn. If it is not possible to maintain a humidity of at least 60 per cent in the knitting room, a more positive type of yarn control is necessary for fashioned knitting.

The humidity is preferably controlled between 50 and 65 per cent. It should be measured daily with a sling psychrometer near the yarn on the knitting machine and the result compared with the reading shown by the humidity control instrument. In many mills the two readings will be quite different, and the controller should be readjusted to give the required humidity at the knitting machines.

Yarn should always be handled by holding the end of the package. On no account should the fingers be allowed to come in contact with the yarn. Otherwise, the ends of yarn will be rolled on each other, and the yarn will not deliver well. The yarn should preferably be stored for at least 48 hours before knitting, in an area in which the humidity is the same as that of the knitting room. The package should be treated as a delicate and expensive material.

Stockings must be handled with great care to avoid snagging. All rough surfaces should be covered with soft, smooth material. Persons handling the stockings should be subjected to a daily inspection of hands or required to wear suitable gloves. All the equipment should be inspected for rough places, and if found, these should be polished with crocus cloth.

Agilon in Full-Fashioned Hosiery. Full-fashioned machines are made with such a variety of thread-up arrangements that it is necessary to treat each machine separately. However, the thread-up of the Agilon monofilament yarn on any machine will be so arranged as to meet as nearly as possible the principle that the yarn should not be turned by any guide through an angle of more than 60°, and preferably less. All devices which nip the yarn so as to back up twist should be eliminated, and the dancing-weight-type of tensioner should not be used.

If there is trouble with kinks, the first thing to do is to ensure that a relative humidity of at least 50 per cent, and preferably 60 per cent, is being maintained in the knitting room at the knitting machines. Then examine the thread-up with a view to further simplification and reduction of the number of surfaces on which the yarn is rubbing. Addition of devices to the thread-up will increase kinking.

The package on which the boot yarn is supplied should be fitted with the cap recommended for seamless knitting and inverted over the knitting head. The yarn

*Obtainable from Plastic Built, Inc., P. O. Box 905, Greenville, S. C.

tension should be adjusted by raising or lowering the guide eye, which should be placed centrally below the cap. A distance of 3 to 3½ inches from the cap will normally give the best delivery and tension. The yarn is threaded directly into the carrier after it leaves the cap, except on machines having a special stationary guide adjacent to the carrier, such as on the Reading machine.

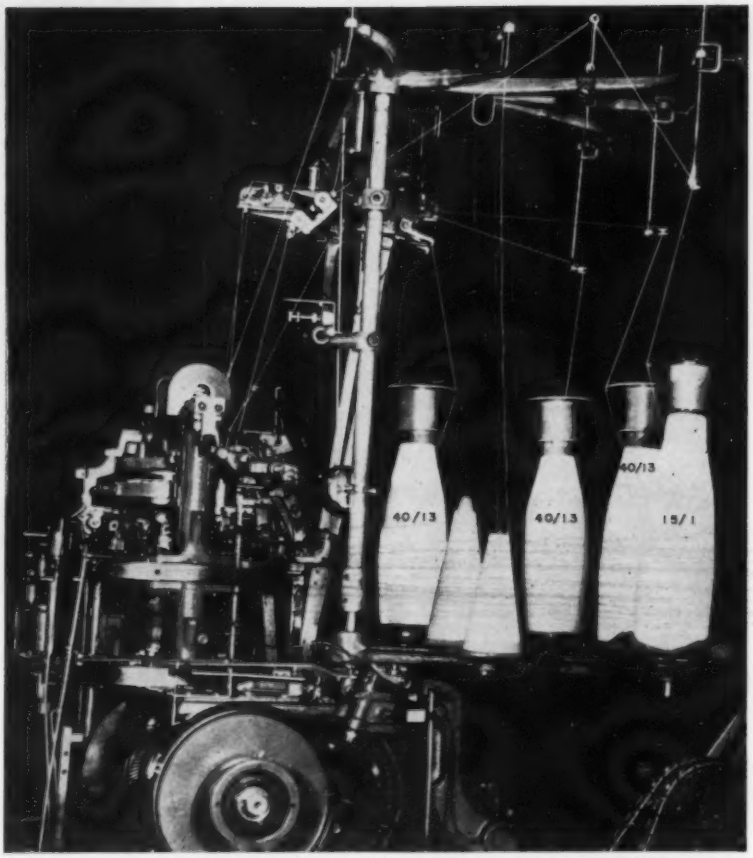
It is important that there should not be any scratches or cuts in the rim of the cap or any damage on the cone of yarn which would result in plucking tensions, as these will invariably give kinks. The cones of 30- and 40-denier yarn should be stood on soft pads to prevent the yarn from trapping under them but otherwise may be knitted in the same way as regular nylon.

Finishing Agilon Hosiery. The finishing procedure is, of course, very important. The grey fabric must be scoured before any other heat treatment, and then it may be dyed and boarded (as in the Dunn System), or it may be boarded (high temperature), and then dyed and final boarded.

For full-fashioned stockings, a neat elastic seam may be obtained by using Agilon 2/30 thread in both hooks and a No. 6 plain seaming thread in the needle. All three threads should be tensioned in the spring pressure disks, and the ratio control not used. The seaming machine should be adjusted to make twelve to fourteen stitches per inch, checked by seaming the folded edge of a paper at full speed. The No. 6 thread in the needle should be tensioned to produce a small seam.

In seaming, the stocking should be held at a tautness similar to that used for seaming plain nylon hosiery, except for seaming the top. Since Agilon contracts much more than other yarns in processing, the welt fabric should be fed to the seaming machine with as little tension as possible.

The seam in the finished stocking will be straight if made as prescribed, and processed by the Dunn System and on DMRC boarding forms. Proper seaming, scouring, and boarding are important factors for a neat finished appearance in the seam and stocking.



Knitting set-up for a seamless machine, and three contact points for monofilament yarns.

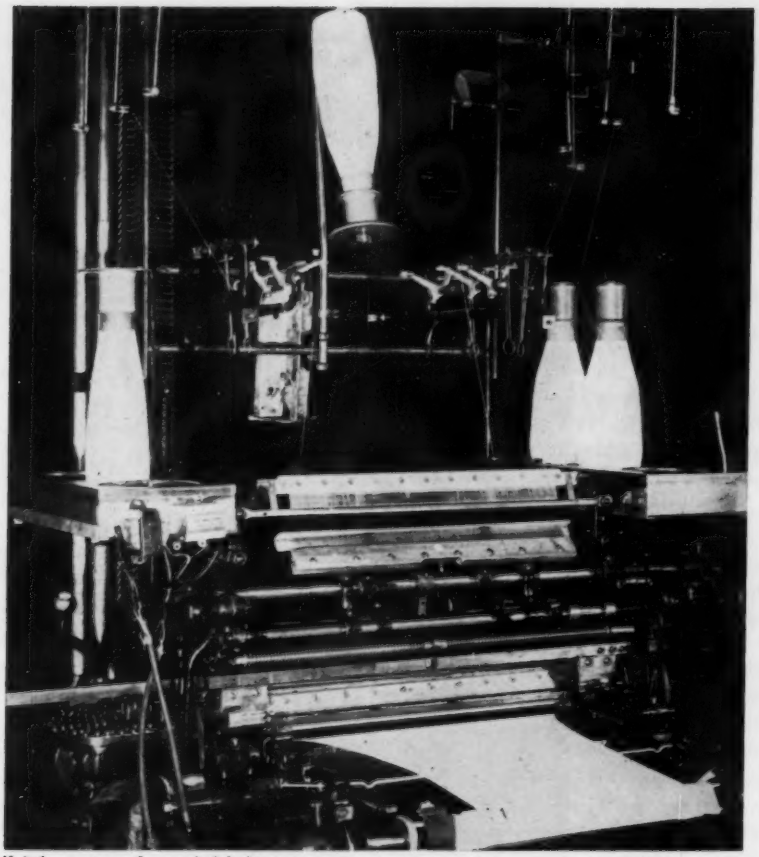
Scouring. Since the elasticity of the hose is developed during the wet finishing, scouring must be done before preboarding or steaming. A rotary or wash wheel-type machine is recommended. There are two scouring cycles, one for stockings made from 15-denier monofilament yarn, and the other for stockings made from 15-denier, 3-filament yarn.

The cycles are not interchangeable. Whatever denier of stocking is being scoured, it is recommended that each bag contain one dozen pairs, the bag being tied as near to the opening as possible, leaving plenty of room for the stockings to move around inside. The machine should be loaded with a 1/2 to 2/3 normal load, measured in dozens of pairs of stockings.

For stockings made from Agilon 1/15/1 yarn, recommended scouring cycles are:

1. The speed of the machine, rotary type, (e.g., Smith-Drum) should be as follows:
   25 lb—12 rpm
   50 lb—10 rpm
   100 or 200 lb—8 rpm
2. 1/2 to 2/3 of the standard load of stockings added to the machine containing cold water (70 to 80 F) to within 2 to 6 inches of the axle.
3. Agitate cold for 30 minutes.
4. Add Orvus Granules HT in sufficient quantity to give 1 inch of suds when the kettle is hot, and continue cold agitation for another 30 minutes.
5. Raise the temperature 3 F per minute to 180 F to 200 F. Hold at this temperature for 15 minutes.
6. Drop the bath and rinse the goods.
7. During the rinsing cycle, a lanolin finish may be added and if the stockings are to be boarded, use a boarding lubricant.

This scouring procedure is absolutely necessary to develop the maximum elasticity in the hose and to give even texture.



Knitting set-up for a full-fashioned machine, with inverted cone of monofilament yarn.

For stockings made from Agilon 1/15/3 yarn, recommended scouring cycles are:

1. A rotary machine (e.g., Smith-Drum) should be run at the following speeds:

25 lb—8 rpm

50 lb—6 rpm

100 to 200 lb—4 to 6 rpm

2. 1/2 to 2/3 of the standard load of stockings added to the machine containing cold water (70 to 80 F), to within 2 to 6 inches of the axle.

3. Agitate cold for 30 minutes.

4. Add Orvus Granules HT in sufficient quantity to give 1 inch of suds when the kettle is hot and continue cold agitation for another 30 minutes.

5. Raise the temperature 3 F per minute to 180 F to 200 F. Hold at this temperature for 15 minutes.

6. Drop the bath and rinse the goods.

7. During the rinsing cycle, a type-8 nylon finish may be added and if the stockings are to be boarded, add a suitable lubricant.

After the scouring is completed, the contracted stockings are (a) dyed, extracted, and boarded, (b) extracted, dyed, and final boarded, or (c) dyed, extracted, and dried if they have been preboarded.

Boarding. All boarding forms used should be narrow and short so as to take full advantage of the elasticity in the fabric. The shape of these boarding forms has been designed to give the finished stocking a neat fabric appearance in the ankle and foot, and a toe that is more free of wrinkles.

The conventional time/temperature cycle is satisfactory, keeping in mind that less severe heat treatment is usually given dyed stockings. When the Dunn system is used, the steam should be rather dry to avoid water marks in the welt and the cycle recommended is 1 to 1½ minutes with steam at 250 F, followed by 1 to 1½ minutes dry.

The foot length should be one-half to one inch shorter than the smallest size for intended use. The length of the stocking is adjusted on the form, pulling the fabric down to give 22½ inches from the bottom of the foot to the top of the welt for a small or (A) size stocking, 24 inches for a medium or (B) size stocking, 25½ inches for a large or (C) size stocking and 27 inches for tall. It is important that the stocking be pulled onto the form gently and smoothed out to give a fabric having a uniform density.

Good results in dyeing may be expected with the standard procedure for regular nylon hose. Finish, if desired, is applied in the conventional manner. Standard resin finishes are helpful in reducing the tendency of multifilament yarns to snag or pick, and their use is highly recommended.

If the stockings are dyed after boarding, they should be extracted and final boarded, using a board similar to the one recommended with a foot size at least as small as the smallest size for intended use.

Good results have been obtained using a modified Dunn system in which only one boarding operation is employed. In this procedure the hose are scoured before preboarding, or steaming. Without being removed from the machine, they are dyed and finished in the conventional manner. After extraction, the hose are subjected to a boarding cycle of 1 to 1½ minutes at 250 F, followed by 1 to 1½ minutes dry.

Stockings of Agilon stretch yarns made to the proposed pattern chain, and knit to conform with the size and length standards will fit a variety of foot sizes:

"A" small—8-9½

"B" medium—9-10½

"C" large—10-11½

The over-all length of the three size proportions is graduated to favor the taller woman wearing that particular foot size. However, because of the excellent elasticity in stockings made of Agilon yarn, each foot size category overlaps the adjacent size proportion. Therefore, this program provides most women with a choice of two lengths.

For example, a short woman wearing size 9 or 9½ could choose

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* * *

Herbert L. Norton came to Du Pont's Finishes Division in 1939, having studied chemical engineering at the Georgia School of Technology. As he added experience, increased responsibilities kept pace. Currently, Herb is Southeastern District Manager, Industrial Maintenance Sales. His background includes problem-solving in such areas of industry as textile, paper, petroleum, food, marine and public utilities.

DU PONT PAINTS

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the "A" proportion, while the taller woman wearing those sizes could select the longer "B" proportion. Women wearing sizes 10 to 10½ also have a length choice between the "B" and "C" proportions.

The "CD" proportion is made with the "C" foot but with two inches added to the leg length to fit the extra tall woman. This extra long stocking, if made on a Scott & Williams machine equipped with the take-up attachment, must be made on machines on which the legs have been extended to facilitate knitting the longer length.

In testing stockings of Agilon yarn in the grey, it is advisable to allow a tolerance of plus or minus ½ inch over the optimum length standard. However, because the variable human element is greater in testing finished goods, allow a plus or minus one inch tolerance from the optimum finished length standard. The DMRC flat form should be made from ¼-inch plastic material or hard pressed wood.*

As the dimensions and shape of the boarding forms have an important bearing on the finished appearance of stockings of Agilon yarn, special patterns have been designed for the A, B, and C proportions, which are coordinated with stocking construction. They were carefully designed to reduce wrinkles at the toe and heel, and contoured to provide a neat fabric throughout the foot, ankle, knee, and welt.

*Available from United Knitting Machine Co., 8th & Maple Sts., Lansdale, Pa. It may also include a metal stand on which the form can be mounted.

The adoption of these forms will simplify the operation of boarding to length standards. Furthermore, the average courses per inch in boarding the length of the foot and leg fabric are approximately the same in all foot sizes and length proportions. This is further assurance of maintaining maximum elasticity and recoverability in the finished stocking.

However, stockings made of Agilon yarn will cling snugly, without binding, to every contour of the foot and leg, even when they are not made exactly to these standards. But, when made to these standards, the stockings will fit comfortably both the smaller and the larger foot size, as listed for each category.

Testing Agilon Hosiery Size. In testing finished stockings of Agilon yarn on the DMRC flat form, attach the same toe piece used for that size in grey testing. However, as the finished stocking is shrunk and contracted to a miniature size in processing, practically all of the elasticity must be removed as follows:

1. Hold the welt of the stocking in the same manner as used for the grey test.

2. Pull the stocking about half way down on the form; then, with both hands, firmly work the foot fabric down over the toe and heel ball of the form, forcing the fabric until the first sole narrowing knot is even with the short line at top of the heel ball, and until the heel is forced to 6¼ inches. If this can be done, within ¼ inch, plus or minus, of the standard heel length, the stocking is well sized.

3. Without completely releasing the grip and with both hands clasped around the form, firmly work the fabric downward with the fingers in short, strong strokes to the edge of the welt. Use the thumbs to straighten the edge of the welt and estimate the average length to the closest ¼ inch.

The finished over-the-knee stocking is tested in the same manner except that the over-all length is measured at the boot end of the afterwelt instead of the bottom edge of the welt.

As the Du Pont leg form is standard equipment in most mills, testing standards were developed on it for finished stockings of Agilon yarn. The transparent plastic type model is used. Two strips of paper, one marked in ⅛-inch graduations for measuring heel length and the other in ¼-inch graduations for measuring over-all length, are fastened to the back of the form with cellophane adhesive tape.

These strips must be accurately positioned by laying a straight edge over the flat surface of the heel ball and measuring down from the underside of the straight edge with a yardstick. When properly positioned over the flat surface of the heel ball, the straight edge should be at a direct right angle to the leg.

As the Du Pont leg form made of solid plaster is larger in circumference than the plastic form, approximate differences in testing standards are noted on the standards chart.

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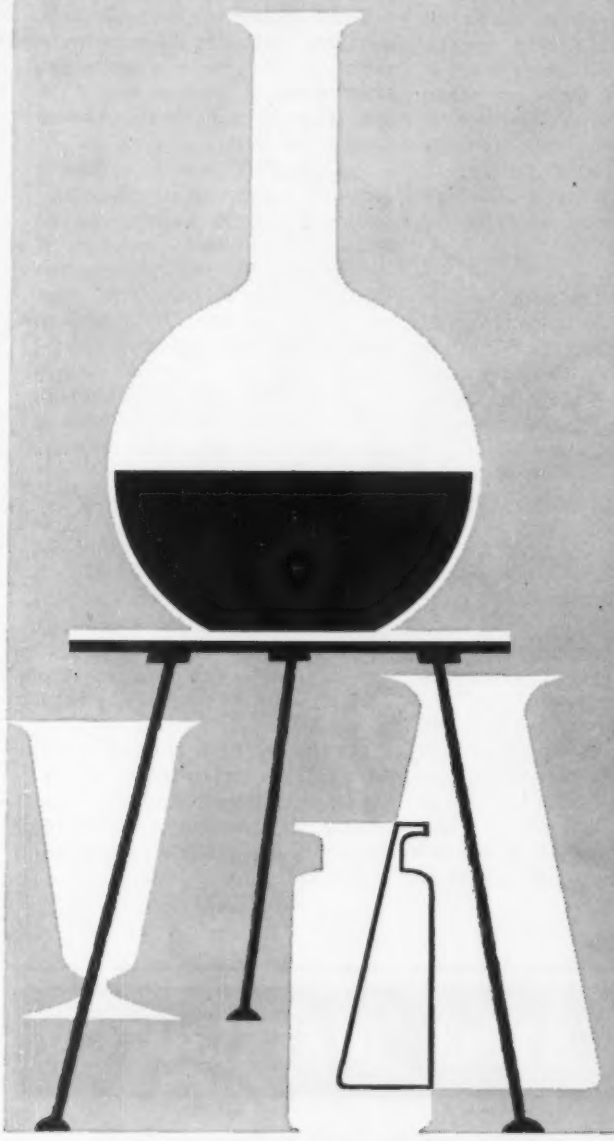
Glytex CMC

by KEEVER



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HOW OTHERS MANAGE

What is YOUR method of preparing cloth for resin finishing?

THE EDITORS:

In preparing cotton fabrics for dyeing and finishing, there are at least three recognized routes: (1) kier boiling; (2) continuous boiling and bleaching in a peroxide bleaching range; and (3) boiling off in rope soaper. There are other less popular routes, of course, such as boiling off on the jig or in an open-width range.

The jig is generally used if other equipment is lacking and the fabric must be handled in the open width. But it is a slow and uneconomical method of processing large yardages. Besides, the results are not as uniform as dyers would like.

An open-width boil-off, on the other hand, is of short duration, and can hardly compare in results with the kier boil or the continuous boiling off and bleaching method.

A caustic soda boil, carried out under pressure in the kier, is recognized as the best method of obtaining a good "bottom," provided that the preceding operation of desizing and such subsequent operations as bleaching, mercerizing, and rinsing are soundly carried out.

Kier boiled fabrics have high absorption, and they can be dyed by continuous methods to give shades of excellent yield and fastness, without the need of using assistants for instantaneous wetting and leveling.

For resin finishing, kier boiling is superior to any other method of preparation, though this might be difficult to ascertain since many factors are involved, such as fabric construction. It might be questioned, too, whether such thorough preparation is essential.

Continuous boiling and bleaching in a peroxide bleaching range has come into use in the last 15 years, as everyone knows, to replace kiers on a grand scale. This method produces a fabric of satisfactory "bottom." On some fabric constructions the results are not comparable to the kier-boiled fabric but on many, particularly on the very common 80 x 80, 4.00

For his method of improving card sliver uniformity by applying spring tension to the production-doffer gear assembly, the kink contest judges awarded the April 15 prize to John McDermid, Hudson, N. C.

The current contest ends August 15, so mail your entries right away. The contest rules are on page 149 of the June issue.

Mr. McDermid

"print" cloth, it is adequate. For resin finishing this method of preparation is satisfactory.

Boiling off in a rope soaper is a slow method, which is used only when the nature of the fabric demands it. It is satisfactory for preparing colored-yarn fabrics and those which contain fiber mixtures not suited for kier boiling. To process these fabrics by a method quicker than rope soaping would not prove altogether satisfactory for resin finishing because in all likelihood the fabric would lack absorption.

Cotton bleachers and dyers will agree that a thoroughly boiled out fabric is *not* necessary, even for continuous vat dyeing which is recognized to be the most demanding of a fabric. It is more important that a substantial part of the impurities, natural waxes, and warp sizes be removed *uniformly* from lot to lot. In other words, it is not necessary to remove all foreign matter, be it natural or added.

Chemists tell us that in resin finishing a reaction takes place between the resin molecule (which is small enough to penetrate the cotton fiber) and the cellulose molecule. The resin reacts with itself as well, in the monomeric stage, to form the polymer of larger molecular size. But at the same time some reaction takes place with cellulose.

If a specific type of chemical reactant is applied to the cotton while it is in a swollen state, a chemical reaction takes place between the reactant and the cellulose to produce wet crease recovery.

Several questions arise regarding methods of preparing fabrics for resin finishing—on the assumption that the chemical reactions during resin treatment are quite critical. First, can differences be detected in such properties as durability to laundering, for example, of a resin treated fabric which has been kier boiled and one which has been boiled off and peroxide bleached continuously? The assumption is made here that the fabric in each case has been rinsed free of alkali prior to resin treatment.

Second, is a kier boiled fabric superior for treatment with a reactant type of product, an agent which imparts only wet crease recovery?

These questions are in part prompted by an experience that came to this writer's attention several years ago. A plant was preparing a colored yarn fabric for resin treatment and calendering to produce a glazed effect.

In one method of preparation, namely, open-width desizing and boiling off, the ultimate finish was not satisfactory though the fabric appeared to wet out easily before resin treatment. When the fabric was prepared by a rope soaping method, however, a very satisfactory finish was obtained.

It would be interesting to learn from readers of TI if they have carried out practical tests to determine the best method or methods of preparing fabrics for resin treatment, and if any extra operations, such as rinsing, are carried out before resin treatment.

Perhaps there are plants that use both the kier and the continuous peroxide bleaching range to prepare fabrics, and hence may be in a good position to present their views on these questions. It is doubtful that natural cotton impurities and warp sizing compounds, if present in smaller amounts, could adversely affect or interfere with the chemical reactions of resin finishing.

On the other hand, it would appear that a cotton fabric, exhibiting no indications of chemical degradation and being substantially pure, should give best results in resin finishing.

CONTRIBUTOR No. 1241

Sales dropped—variation found

THE EDITORS:

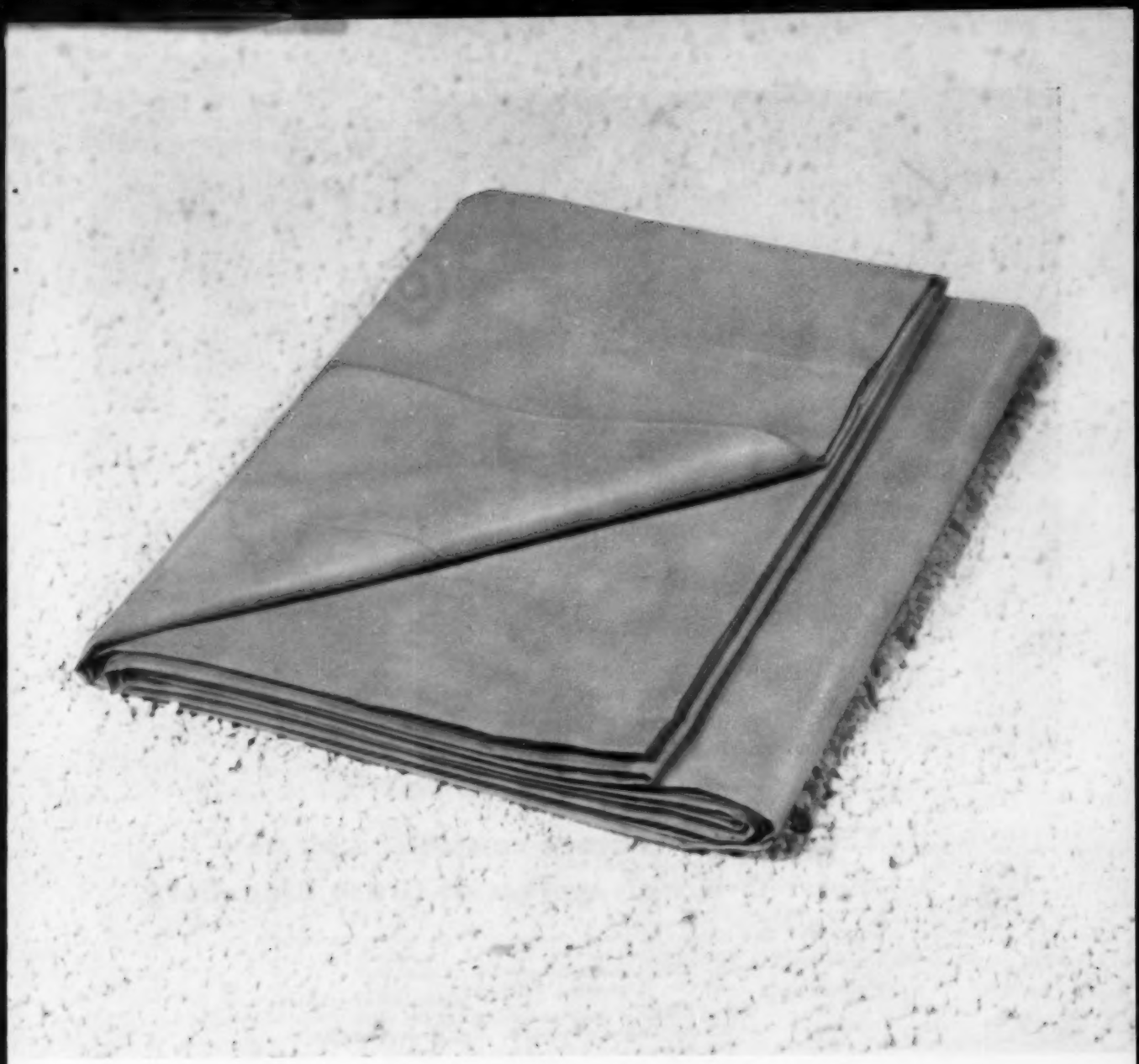
A New England mill making cotton yarns for zipper tapes, which were woven on their own looms, felt that a more even yarn might enhance the quality of its zipper tape.

Sales had fallen off slightly in a certain type of tape and triggered the investigation. Sizings of the 2-

TABLE 1

Sizings of 15" Lengths of 30s/2 Cotton Yarn

Length number	Weight in grains	Ply yarn number	Averages		Per cent variation
			Weight	Number	
1	0.2346	14.80			
2	0.2423	14.33			
3	0.2438	14.24			
4	0.2392	14.52			
5	0.2531	13.72	0.2426	14.32	7.54
6	0.2531	13.72			
7	0.2315	15.00			
8	0.2392	14.52			
9	0.2377	14.61			
10	0.2377	14.61	0.2398	14.49	8.83
11	0.2269	15.30			
12	0.2500	13.89			
13	0.2531	13.72			
14	0.2377	14.61			
15	0.2407	14.42	0.2417	14.39	10.98
16	0.2268	15.31			
17	0.2145	16.19			
18	0.2438	14.24			
19	0.2268	15.31			
20	0.2299	15.11	0.2284	15.23	12.80



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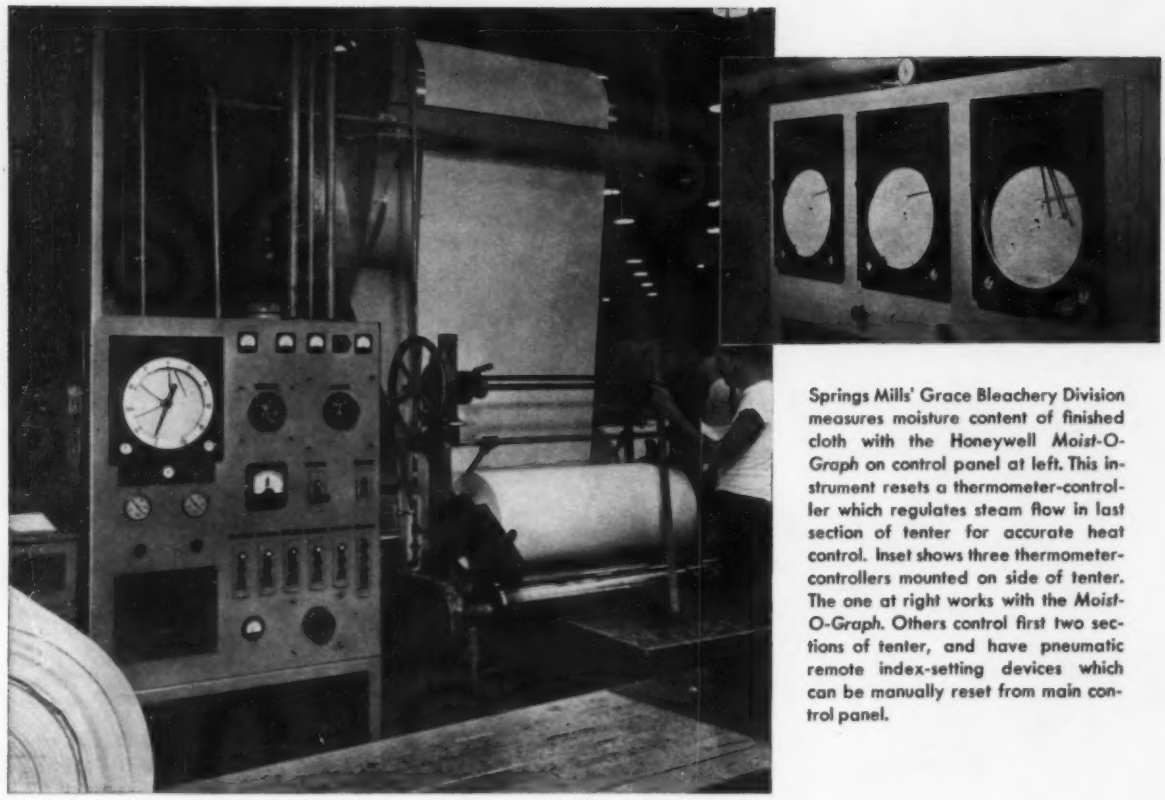

Springs Mills' Grace Bleachery Division measures moisture content of finished cloth with the Honeywell *Moist-O-Graph* on control panel at left. This instrument resets a thermometer-controller which regulates steam flow in last section of tenter for accurate heat control. Inset shows three thermometer-controllers mounted on side of tenter. The one at right works with the *Moist-O-Graph*. Others control first two sections of tenter, and have pneumatic remote index-setting devices which can be manually reset from main control panel.

Tenter temperature controlled by new *Moist-O-Graph* system at Grace Bleachery

RESULTS:

- Better weight and hand of cloth, because close temperature control assures proper retention of finishes.
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- Steam savings through increased efficiency in tenter operation.
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THE INSTRUMENTS: Honeywell *Moist-O-Graph* includes a primary measuring unit (detector roll), an indicating and recording control instrument, and a signaling unit. The detector roll contacts the cloth as it passes over the electrically-grounded idler roll. Small electric current flowing through the cloth is measured by the *Moist-O-Graph* to provide continuous, precise measurement of moisture content.

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With salt of average purity, calcium and magnesium compounds complex dyes and reduce their effectiveness. But with high purity Chemical Grade '999' Salt, you get the all sodium salt—99.95% pure sodium chloride with a trace of sodium sulphate—that is recommended whenever commercial calcium free salt is required.

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ply yarn comprising the warp section of the tape were undertaken with the idea that they might point up a positive clue to improvement.

The 30s/2 yarn was made of American Dory, 1⅛" staple, and this type of cotton was considered the best grade that could be used, considering the highly competitive narrow fabric market. The cotton was combed, taking out about 8 per cent of short staple.

It was decided to make up a few panels on a large seriplane blackboard, the kind used in checking the evenness of silk. The two-ply yarn looked fairly even.

What next? Finally some one said: "Let's have the testing laboratory make some short length sizings of the material on one of the blackboards." The idea seemed good and the lab technician then cut off 20 successive lengths of 15 inches each.

These were conditioned in the lab for 24 hours and were then weighed individually in a delicate chemical balance. The results are shown in Table 1. The weighings were made of five successive lengths in a group, and were tabulated in decimal parts of a grain.

The reason for taking groups of five successive strands was to get some idea of the uniformity of the multiple strands of five each. By the use of one spinning bobbin the variation would be pinpointed within that bobbin. It could then be assumed that the variations would be pretty much the same for any other bobbin or bobbins on a well operated spinning frame.

A glance at Table 1 shows the weight in decimal parts of a grain. These, in turn, were then transposed into the grist; that is, the number of the plied yarn.

Each group of five threads was averaged and the percentage of variation of the grist or ply-number was calculated. It will be noted that the percentage of variation grew successively larger with each succeeding group of threads.

This indicated that there was quite some variation of size within the one bobbin and gave rise to the thought of finding means for increasing the evenness of the yarn within the individual bobbin. The frequency distribution of the grists is shown in Table 2. It, too,

TABLE 2

Frequency Distribution

13.50	111	3
14.00	1111	4
14.50	11111 11	7
15.00	11111	5
15.50	0	0
16.00	1	1
	Total	20

Summary:

Per cent variation, singles	16.97
Per cent variation, ply	10.04
Standard deviation, singles	0.95
Standard deviation, ply	0.61

indicated that the evenness could stand working on in order to have the curve approach the normal curve of dispersion.

Some 300 spinning yarn sizings, although not shown, were also available for analysis. The average sizings of this group was 29.47, which compared well with the single yarn standard of 30.00.

A summary of the percentage of variation of the single yarn, 16.97, versus the ply-yarn variation of 16.04 is given, and also a comparison of the standard deviation of the single yarn, 0.95, as against the standard deviation of the ply yarn, 0.61.

Thus, it will be seen, as may be expected, that in both instances (per cent of variation and standard deviation) the ply yarn shows more evenness.

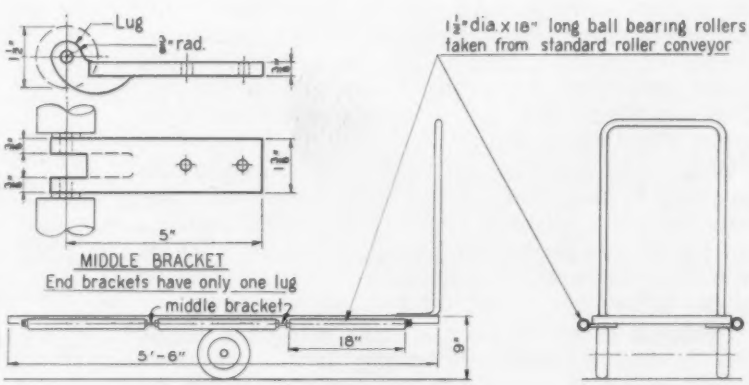
To promote greater evenness it was decided that an increase in the amount of short fiber removed would help the evenness of the spinning yarn which, in turn, would reflect itself in the ply yarn. The comber waste, accordingly, was increased to 10%. Special attention to servicing the spinning frames, plus the slightly greater removal of short fiber, resulted in a satisfactory improvement in the zipper tape.

CONTRIBUTOR No. 1201

Rollers aid warehouse truck loading

THE EDITORS:

I had ball bearing rollers located at the sides of our trucks, as shown in the sketch, to facilitate the handling of skips and containers.



Sometimes skips are piled two and three high and are quite heavy to pull onto a truck. These 18" x 1½" diameter rollers were taken from a disused roller conveyor and mounted in steel brackets, as shown. The top of the 1½" diameter roller is set ¼" below the height of the platform.

With this arrangement, skips and containers can be loaded and unloaded from the truck much faster with less effort. The front and rear swivel wheels are not shown on the drawing.

CONTRIBUTOR No. 1147
(England)

Last year, traffic accidents killed 37,000, injured 1,400,000

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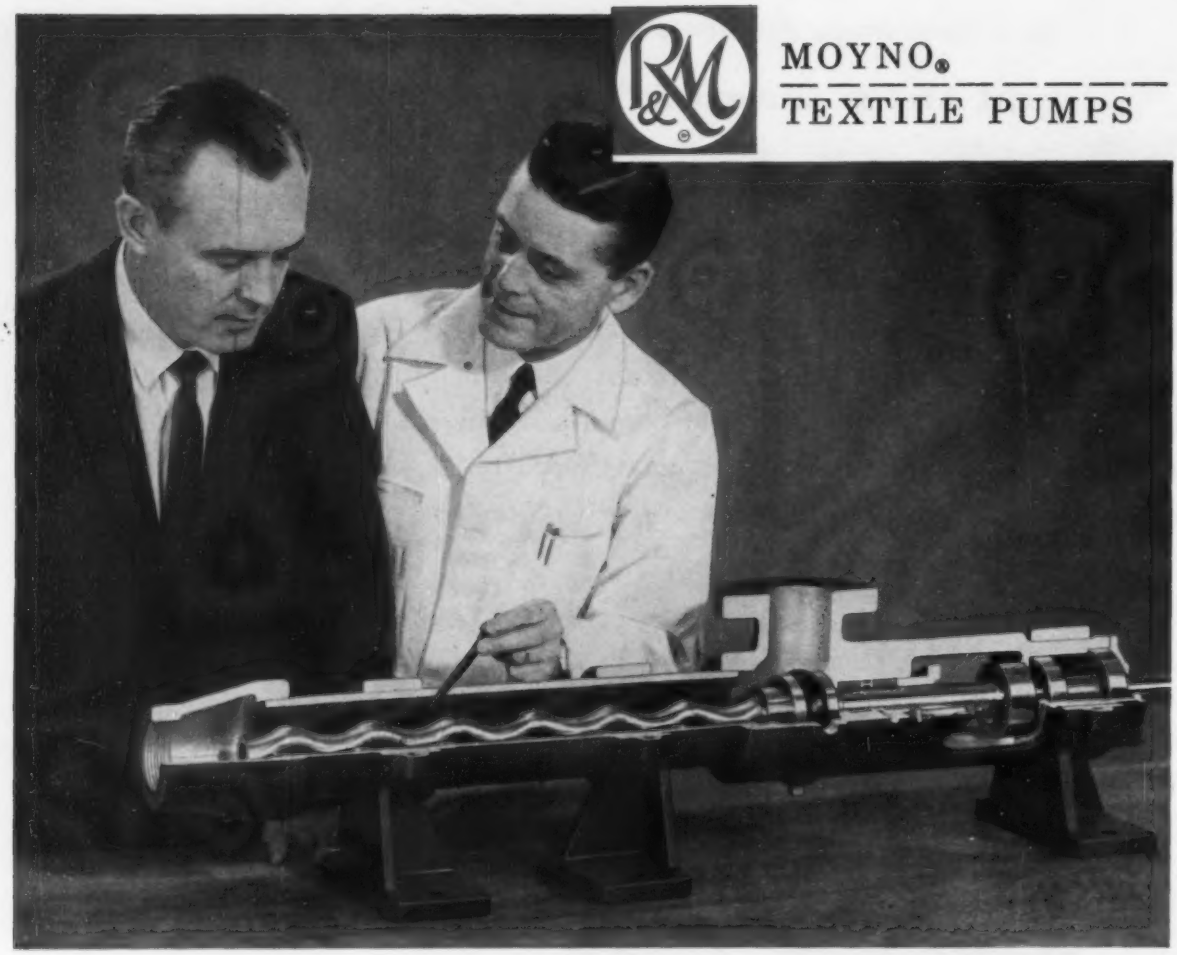

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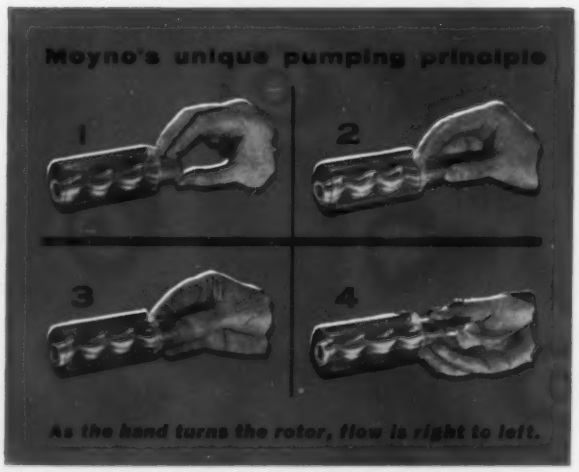

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How to adapt a cotton coiler for long-fiber use

THE EDITORS:

It is well known that certain types of fiber and blends give rise to difficulty in coiling into a can on cards, combers, and drawing frames designed for cotton processing, and as a result production is hampered.

This can be overcome by fitting depository coilers (this is expensive) and to some extent by using a pad of waste pushed by a spring up to the underside of the coiler plate. With this method it is not possible to put as much sliver into a can as when using empty cans. Also, if the stock being worked is of a springy nature, this fact, coupled with the effect of the can spring, quite often topples the sliver onto the floor.

We have successfully overcome troublesome coiling into cans by using a very simple device and at the same time using cans without springs if they are not required.

It has been used on acetate, nylon, polyester, rayon-wool blends, etc., on many coilers. Production has been higher— more sliver in can, and trouble-free running.

The production of the anti-coiling-trouble device is quite simple and consists of a tube extending from the calender roller nip into the throat of the coiler top. See Figure 1.

The tube can be of either metal or resinous plastic material, the latter being a must on machines with an electric stop motion. The outside diameter of the tube can be any measurement, providing the part that enters the coiler top throat does not obstruct the coiler top when revolving and is sufficient to carry an inside bore of 7/8″ to 1″.

It is important that the top of the tube fit snugly into the nip of the calender roller. It is because of this, and the lack of standardization in textile machines, that the device is made in two parts rather than being tailor made each to its own coiler, although there is nothing else against a one-piece device.

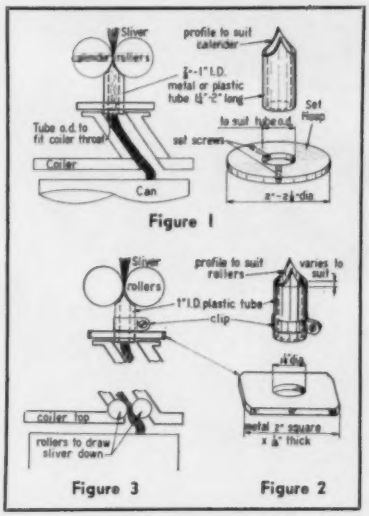


Figure 1

Figure 3 Figure 2

The other part of the device is a set hoop, bored to suit the outside diameter of the tube and fitted with one or two sharp-pointed set screws.

This set hoop both holds the tube to the calender nip and forms a seating for the device on the coiler top. The tube must protrude from the set hoop into the coiler top throat—this both locates the device and conducts the sliver right into the sloping coiler tube.

Now for particulars: the tube is fashioned by cutting away the top to some profile to suit both the diameter and position of the calender rollers. It is cut off to length to suit the machine, and this can vary from 1¼″ to 2″ according to machine geometry.

The set hoop is bored to suit the outside diameter of the tube, say 1 1/8″ to 1½″, and is about ¼″ thick. Provision is made for one or two sharp-pointed set screws.

The outside diameter of the set hoop must be large enough to span the bore of the coiler throat—remember is has to position the tube to calender nip and form a seat. Some have been made as low as 2″, and others have had to be as much as 2½″ in diameter.

Figure 2 shows an alternate method of fitting the tube atop the coiler throat. A metal plate is used instead of the collar and set screws, and a simple metal clamp is fitted around the tube. By fitting the tube carefully to the hole in the metal plate, it can be adjusted up and down by drifting the position of the clamp.

Figure 3 is a cross-section drawing of a depository coiler (mentioned in the second paragraph), showing the extra pair of rolls used to draw the stock through the throat.

CONTRIBUTOR NO. 1242
(Scotland)

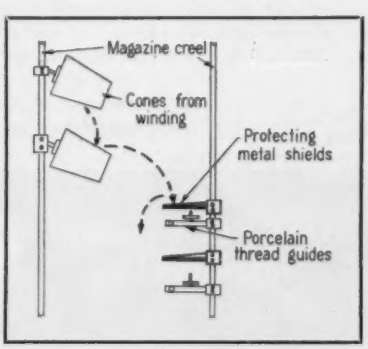
Prevents guide breakage

THE EDITORS:

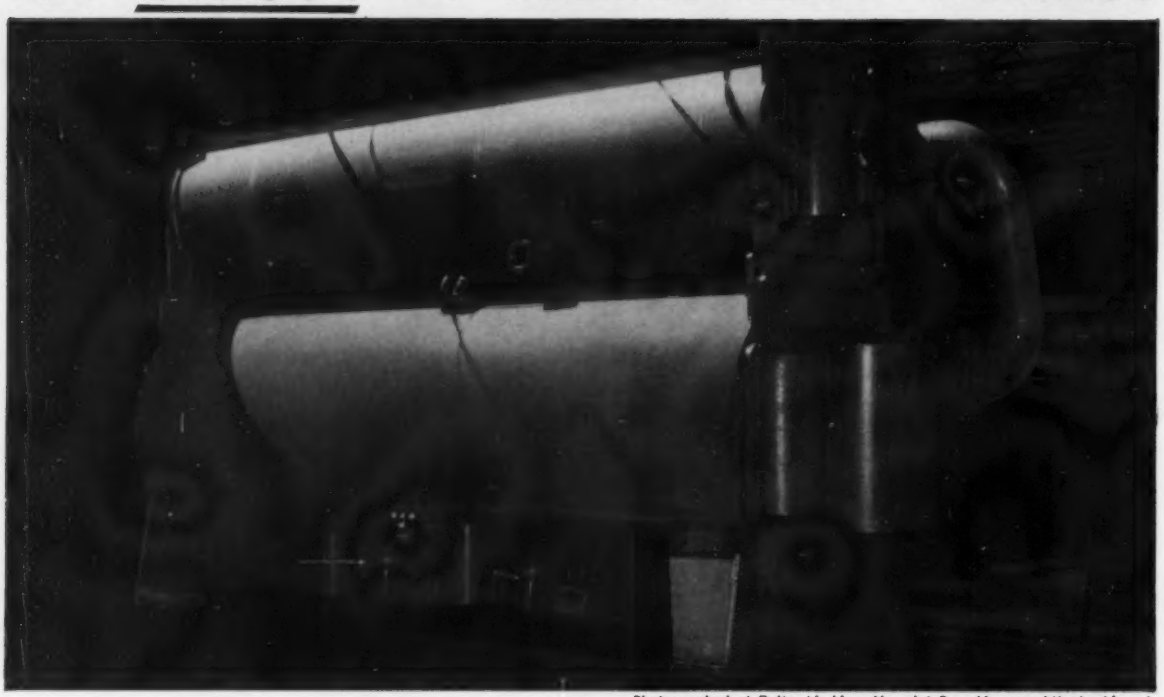
We used to lose from breakage a number of porcelain thread guides on the magazine creels of our high-speed warping machines. On investigation we found that yarn packages often slipped from their holders, and these invariably hit and sometimes broke the nearby porcelain thread guides while falling. We mounted a protective shield (of aluminum or steel) above each thread guide except for a few at the top of each vertical stand. Refer to the drawing.

The simple measure stopped such breakage completely and allowed us to reduce sharply our inventory of that item.

CONTRIBUTOR NO. 1216
(India)



Even boiler-cooled air conditioner faces the *Oldest* of maintenance troubles



Photographed at Delta Air Lines New Jet Base Hangar, Atlanta Airport.

Lithium bromide absorption systems need protection of their condenser cooling circuits

A popular development in air conditioners is the boiler-fed, water-cooled lithium bromide absorption system. It is economical and efficient, but since water plays a major part in its operation its maintenance problems are the same old ones—metal rusting, pitting, scaling and reducing efficiency to a point of complete breakdown.

Two ANCO products—Coolex and SR-2—can help you get and maintain top performance from your air conditioning system by neutralizing the effects of scale-forming and corrosive elements. Coolex and SR-2 keep rust and scale from forming and acting as insulators, from reducing heat transfer to an ineffective minimum. With the proper treatment program using these products the capacity of your system is maintained, operating costs are held to a minimum.

There are competent ANCO service representatives throughout the South who are experienced in all phases of water treatment and who will be glad to come by your office and give you the full story. Call or write to one of the offices listed below and we'll see that you get prompt attention. A simple maintenance program now may save you hundreds of dollars later, and there is no obligation on your part for talking with one of our men.

Write today and request an Anderson service engineer to make an analysis and recommendation on your plant's water treatment. There is no cost for this service.

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Printing rolls—recopper or buy?

THE EDITORS:

This is in reply to CONTRIBUTOR No. 1142 who supplied the article "Would a Print Roll Recoppering Plant be Economical?" published in your October, 1959, issue. My experience, coupled with the advice I receive from the customers I service in the textile engraving and plating trade, have led me to believe that depositing copper on used copper print rolls has not proved satisfactory in this country.

Due to the depths required for most textile printing operations, the composition of the deposit results in an unevenness or lack of uniformity that prevents etching from being controlled as to depth, etc. This "texture" also affects quality whenever die or mill pressure is applied in mill engraving. If applied poorly, the copper can actually peel off.

I do not have up-to-date costs that would serve as comparisons for replacing vs. recoppering, but our latest figures on that subject show that at one plant recoppering cost twice as much as new rolls. There was a considerable sum invested in the system that is not reflected in this cost.

Dechroming is done two ways, the most common method being the muriatic acid strip. The roller, heated by steam or gas is rotated in a tray or trough of the acid until the chrome is removed.

The second method is reverse electrolysis in which the current is passed through the roller while it is in a tank similar to the one used in plating, and the chrome is redeposited in the solution. This method is the cleaner of the two, for it leaves the roll so smooth that very little buffing is needed to prepare it for replating.

In the muriatic acid method, the rolls often must be stoned or scoured down, and sometimes this is sufficient to destroy the engravings. This is particularly true today with the rather shallow photoengravings being so popular.

LEE J. JOYAL
Lee J. Joyal Co.

"We too spin heavy and like it"

THE EDITORS:

We read with interest your second reply to Ralph Lathem's article "Do You Spin on the Heavy Side" that appeared in the March 1960 issue, page 155, and would like to corroborate that we "spin on the heavy side and like it," although we are an integrated mill weaving the yarn into a fabric.

We find that if we want to save by producing lighter cloth, it is more profitable to reduce one or two picks per inch than to spin on the light side, when the customer accepts this. By spinning on the heavy side, the cost of spinning is less and the strength of the yarn is higher. And for this reason we have less breakage at the looms, making it possible to increase the work load of the weavers and, most important, a production increase is obtained by reducing construction one or two picks per inch. These greatly reduce costs.

To guide ourselves in any changes of this sort, we have prepared a graph showing the relationship between cost of weaving and picks per inch, efficiency, looms per weaver, and looms per filling hand.

We are weaving an average cloth of 3.309 yd/lb with 30s yarn and 50 picks per inch. If we were to spin 30.25s, the cloth that would result would measure 3.337 yd /lb; on the other hand, if we lower the picks to 49, the resulting cloth would measure 3.331 yd/lb, but the saving would be greater.

CONTRIBUTOR No. 1244
(Mexico)

Broken tails no obstacle

THE EDITORS:

The tails on the cones of yarn sometime get broken off in handling, and when the knitter comes to a cone of such yarn he can insert a knitting needle in the package and hook the last visible loop of yarn next to the cone. By pulling this loop out and breaking it he has an end, or new tail, to which the following supply cone can be twisted.

CONTRIBUTOR No. 1100

Grooved picker rod works better

THE EDITORS:

We were having trouble with our picker rods on W-3 looms running hot, causing pickers and bushings to crack and wear excessively. We cut a flat place on the rods 1/16" deep and 8" long, starting it 12" from the inside end. This serves as an oil reservoir and allows the air to escape as the picker moves forward. The rods run cooler and we can oil every 24 hours instead of every 8 hours. We save wear on pickers and bushings, and we save on oil.

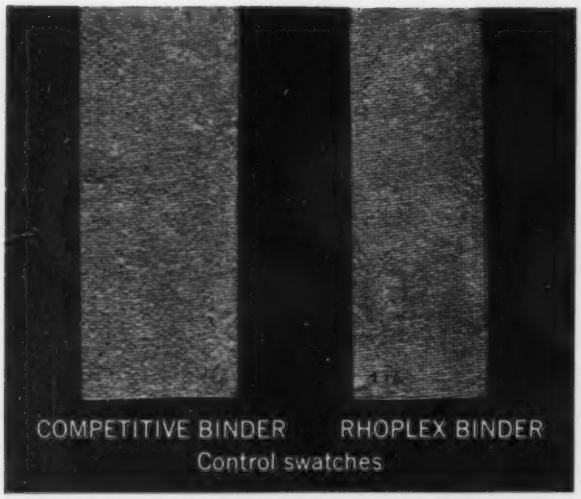
CONTRIBUTOR No. 1243

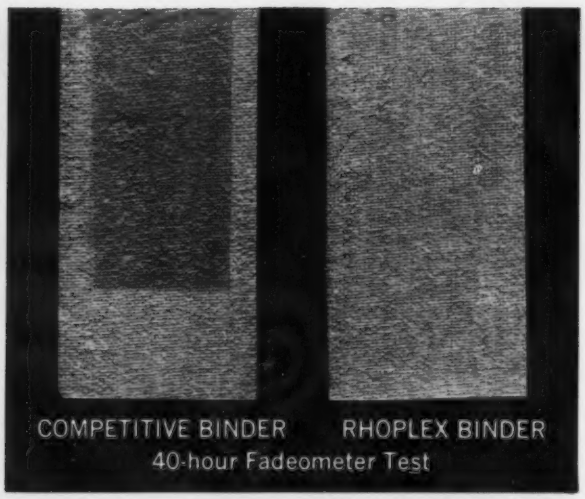
A use for old air hoses

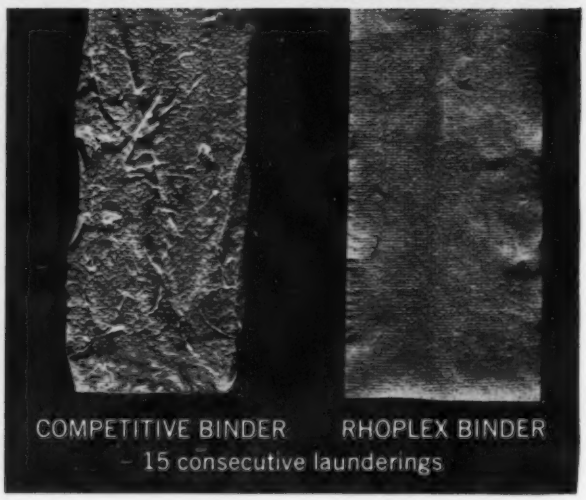
THE EDITORS:

A section of a discarded air hose is a helpful pad to use on the end of a file when doing heavy or prolonged filing. Slit a four-inch section to receive the broad end (not the tang) and use it as a "T" handle in guiding and applying pressure to the "off" end of the file.

CONTRIBUTOR No. 1217







Durable non-woven fabrics begin with RHOPLEX binders

You can process durability right into non-woven fabrics with RHOPLEX binders, and get a number of other advantages as well. RHOPLEX acrylic emulsions are clear and are virtually sun-proof. They do not normally discolor or have a stiffening effect on fabrics as they age. And RHOPLEX resins strongly resist breakdown by cleaning solvents, soaps and detergents.

On both woven and non-woven fabrics, RHOPLEX resins are valuable binders for pigments. Colors stay bright. RHOPLEX can also be used to give a desirable "hand" to woven fabrics, and is widely used as a backing for upholstery goods.

Get technical descriptions of RHOPLEX resins useful in textile finishing by sending a request, on your company letterhead, today.

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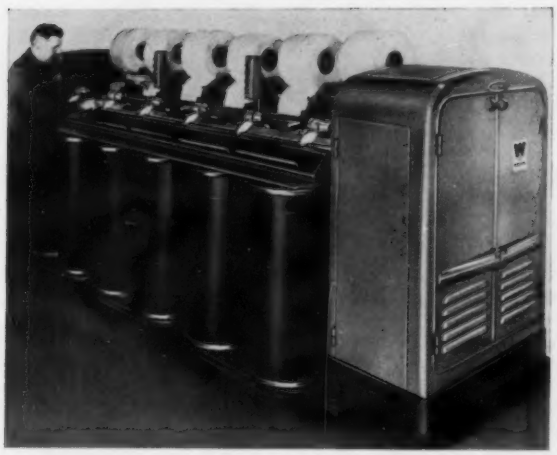
NEW PRODUCT PARADE

Please note: Claims made in all of these announcements of new developments are of necessity based upon information furnished by the respective suppliers.—The Editors.



Worsted comber boosts output 400%

► *Displayed in Atlantic City*

A wool and worsted comber offering production increases up to 400% has been announced. Called the Whitin American Comber, Model M, the machine produces up to 75 lb per hr from its six-head delivery. Equally efficient in combing wool tops and recombing straight wool or blends of wool and synthetics, the comber provides improved sliver control, removes a greater percentage of short and imperfect fibers and foreign matter, reduces maintenance and operating costs substantially, and offers higher production from less floor space.

Operating at a constant 125 nips-per-minute speed, the comber features greatly simplified design, making use of the movable nipper employed in cotton system combers.

The reverse feed principle is utilized. In operation, the fringe is fed during the backward movement of the nipper frame. While the nipper assembly moves backward, fringe is combed by 14 rows of needles in the half lap. As nipper knife opens, fringe rises and is positioned into the bite of detaching rolls by a cushion plate and special fringe control blade. Combing and piecing are completed as stock is drawn through the descending top comb. When complete, combing and piecing of fringe have been accomplished, the new cycle is begun during the next backward movement of the nipper assembly.

The large diameter detaching rolls and heavy spring weighting utilized enable the machine to accommodate input weights up to 2000 gr/yd.

Whitin Machine Works, Whitinsville, Mass.

Do you want more data? Write ◄ or use card on page 177; list G-101

Padder has manually adjustable squeeze rolls

► *Displayed in Atlantic City*

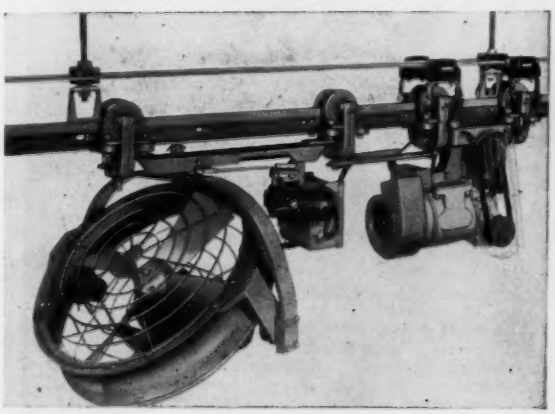
The new "Proctor Padder," which is available in two- and three-roll models, may be used for finishing, impregnating, and dyeing of fabrics of all weaves and of all fibers. An exclusive feature of the machine permits manual setting of the squeeze rolls to the most effective relative position for any padding operation. The rolls are interchangeable, cylindrically ground, and hydraulically loaded for uniform pressure over the full roll width. A full line of accessory equipment is available.

Proctor & Schwartz, Inc., 7th St. & Tabor Rd., Philadelphia 20, Pa.

Do you want more data? Write ◄ or use card on page 177; list G-102

Oscillating ceiling cleaner is more efficient

► *Displayed in Atlantic City*



A new model of the American MonoRail traveling ceiling cleaner is more effective because of an oscillating feature. Among benefits to be derived from the cleaner are: elimination of up to 95% of the manual labor re-

WHITINSVILLE, MASS.

H.J. THEILER CORPORATION

SPARTANBURG, S. C.

Ruti Machinery Works, Ltd. — Looms, Sizing Machy.
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quired to maintain a clean ceiling; reduction of downtime for hand cleaning; safer operating conditions.

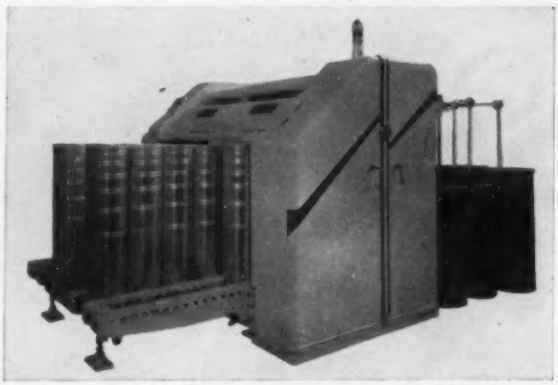
The unit automatically cleans ceilings, preventing lint accumulation, by hurling a column of high-velocity air overhead as it travels up to 100 fpm around loops of a monorail track. The fan can be easily adjusted for horizontal or vertical angles in order to change the air stream and remove lint from the lights, pipes, ducts, walls, and other overhead equipment.

The American MonoRail Co., 1111 E. 200th St., Cleveland 17, Ohio.

Do you want more data? Write ◄ or use card on page 177; list 6-103

Automatic-doffing 3-over-4 drawing

► *Displayed in Atlantic City*



The O-M 3-over-4 high speed drawing frame is capable of production speeds in excess of 400 fpm. Completely streamlined, it incorporates power-driven sliver lifting creels, three sets of stop motion pilot lamps to pinpoint the source of stoppage, and a suction cleaning system—in which the suction clearers actually contact the rollers—for all top and bottom rollers.

Other features include: (1) a system of automatic can doffing in which as many cans as desired are automatically fed on conveyor belts into each delivery and the full cans moved away on rollers (a feature especially valuable in conjunction with the smaller OM-S spinning cans), and (2) a new system of cutting the sliver during the doffing operation.

Edward S. Rudnick, Representatives, Olympia Bldg., New Bedford, Mass.

Do you want more data? Write ◄ or use card on page 177; list 6-104

Special-purpose belts don't slip, last longer

► *Displayed in Atlantic City*

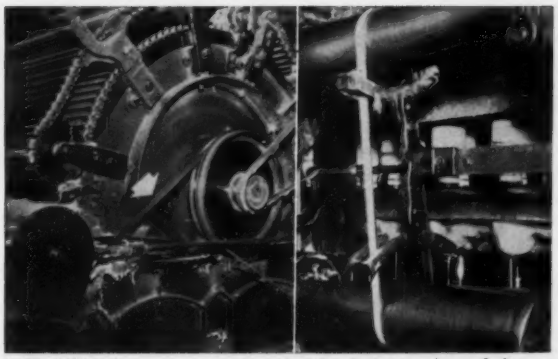
Nylon-core belts made especially for use on cotton and wool cards, roving frames, and twisters offer up to four times the load-carrying capacity and up to three times the coefficient of friction of conventional belts. In addition, they feature high elasticity, freedom from permanent stretch, and high flexibility.

Cotton card belts provide improved quality of sliver and longer life (three times that of conventional belts).

Wool card belts provide greater web control and last at least three times longer.

Roving frame cone belts are narrower than conventional cone belts, provide improved building action to produce firmer packages, and last longer.

Twister belts provide greater uniformity of spindle



LEFT—White arrow points to 1"-wide licker-in drive belt on cotton card: RIGHT—Close-up of roving frame showing the 1"-wide cone drive belt.

speeds that result in closer twist tolerances, lower the spindle pressure needed by 25 to 50 per cent and thus increase bearing life, last from two to six times longer.

Extremultus, Inc., 25-11 40th St., Long Island City 1, N. Y.

Do you want more data? Write ◂ or use card on page 177; list G-105

Gas burner offers low-cost, high-radiation heat

A new infra-red gas burner which is particularly suitable for oven, conveyor, rotary drum, and roll dryer applications provides low-cost, high-radiation heat over a greater temperature range.

Designated the Type "H" burner, it provides from 150 to 3,000 Btu's per linear inch (the equivalent of from 45 to 900 watts per linear inch), depending upon gas-air mixture supplied. Combustion takes place completely within the fluted refractory (there is no combustion chamber) which attains operating temperatures to 2600 F when operated in the open.

Two types are available: (1) an alloy for the elevated temperatures; (2) cast gray iron for open applications. Burners can be made in any desired lengths from 7" to 100 feet or more.

Red-Ray Mfg. Co., Inc., 318 Cliff Lane, Cliffside Park, N.J.

Do you want more data? Write ◂ or use card on page 177; list G-106

Compact variable speed drive with built-on motor

► *Displayed in Atlantic City*

The compactness of a new line of variable speed drives with built-on motors makes the units readily adaptable to existing machinery. The drives, known as "Speed Variators," are all-metal, traction-type variable speed drives with stepless speed control. Simple operation and long life are other advantages of the units which are offered in capacities ranging from fractional to 16 hp.

An output speed range of 385 to 3450 rpm can be obtained when a 1150 rpm motor is used; with a 1750 rpm motor, output speeds range from 585 to 5250 rpm.

Cleveland Worm & Gear Div., Eaton Mfg. Co., Cleveland 10, Ohio.

Do you want more data? Write ◂ or use card on page 177; list G-107

WHITINSVILLE, MASS.

H.J. THEILER CORPORATION

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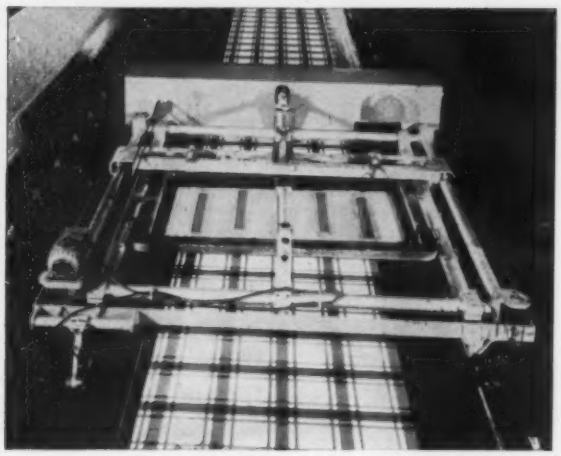


Automatic carriage for screen printing tables

► *Displayed in Atlantic City*

The SACM automatic silk screen printing carriage for use on existing tables reduces substantially the cost and improves quality as compared with a hand operation. Precision and speed are higher than with the very best work done by hand. One unskilled operator can run two to three tables. Versatility is another advantage of the carriage, as it can print either in the direction of the warp or filling, every stop or every other stop, etc.

The operator places the screen in the automatic carriage, with the appropriate color. When he presses a start button, the machine automatically prints all the way down the table, reverses its direction, comes back to the starting point and stops, ready for operation with the next screen and color. It is driven electrically and requires little maintenance.

Societe Alsacienne de Constructions Mecaniques, 3 Channing Place, Cambridge, Mass.

Do you want more data? Write ◄ or use card on page 177; list G-108

Fibers and yarns

An extra-white filament nylon yarn recently introduced was expressly developed for foundation garment and other intimate apparel fabric applications where a "whiter" white is desirable. The whitening agent incorporated in the yarn, designated "Blanc de Blancs" (white of whites), is not removed by ordinary scouring or wet processing. Available in a variety of deniers for circular knit, leno, and power net girdle blanks and related findings, as well as warp knit apparel fabrics, the nylon textures easily, has a soft hand, and produces fabrics which are more comfortable.

American Enka Corp., 350 Fifth Ave., New York 1, N.Y.

Do you want more data? Write supplier or use card on page 177; list G-201

Black solution-dyed Kodel polyester fiber is now available in 2.25, 3, and 4.5 denier-per-filament staple and tow. Particularly useful for manufacturers of wool and worsted blends, the fiber makes it possible to obtain color

Moretex the Rx of Chemicals

Like a doctor's prescription, Moretex Chemicals are held to rigid standards of purity. Laboratory research is constantly seeking ways in which to improve existing formulae and develop new ones for the fast growing array of fibers.

APPLICATION	PRODUCT NAME	CHEMICAL NATURE
ANTISLIP	MOROPOL EMULSIONS	EMULSIONS OF POLYETHYLENE
	BINDER X	CHITOSAN ACETATE
ANTICROCK	MOROPOL X-105	AQUEOUS POLYETHYLENE EMULSION
BLEACHING ASSISTANT	SULFONATED CASTOR OIL	50% AND 75% SULFONATED CASTOR OIL
CHELATING AGENT (Fe, Al)	MORENE S	POLYHYDROXY CARBOHYDRATE
CHELATING AGENT (General)	MORENE 30	SODIUM SALT OF ETHYLENE DIAMINE TETRA ACETIC ACID
EMULSIFIER	MOROSOL SL	POLYOXYETHYLENE SORBITAN STEARATE
DYE FIXATIVE	MOREPEL RW	AQUEOUS DISPERSION OF PARAFFIN & ALUMINUM ACETATE
FINISHES		
BODYING AGENT	MOROLUBE H61	ANIONIC FATTY ESTER EMULSION
CRUSH RESISTANT (Durable)	MOROPOL 700 600	AQUEOUS POLYETHYLENE EMULSION
EMBOSSING & GLAZING	MOROPOL 700	AQUEOUS NONIONIC POLYETHYLENE EMULSION
SEWABILITY FINISH	MOROLUBE GW	AQUEOUS NONIONIC HYDROCARBON EMULSION
SHRINKAGE CONTROL	KYLAN	DEACETYLATED CHITIN
SOFTENERS		
CATIONIC	MORAMINE C	FATTY ACID AMIDE—ACETIC ACID SALT
KNITTING	MOROPOL 600	NONIONIC POLYETHYLENE EMULSION
NAPPING		
SOFT	MORAMINE NS	MIXED FATTY SULFONATES & AMIDES
FULL BODY	MOROFIN 61	ANIONIC DISPERSION OF FATTY ACID ESTERS
SCROOP	MOROFIN AD	ANIONIC DISPERSION OF FATTY ACID ESTERS
NON SOIL RETENTIVE (Durable)	MOROPOL 762	DISPERSION OF GLYCERIDIC EPOXYDIZED OIL
WASH & WEAR (Durable)	MOROPOL 700, 762	NONIONIC EMULSION OF DURABLE RESIN PLASTICIZERS
LUBRICANT (Yarn)	MOROLUBE BA	NONIONIC LIQUID EMULSION OF SATURATED HYDROCARBON
PENETRANTS	MOROWET DC70, DC25	SODIUM SALTS OF DIOCTYL SULFOSUCCINATE
DYEING	MERCERIZER ASS'T.	CRESYLIC BASED PENETRANT
MERCERIZING	MOROWET LF	SULFONATED BUTYL OLEATE (Sodium Salt)
REWETTING	MOROSOL 4L	PEG 400 MONOLAURATE
PLASTICIZER & DISPERSANT		
SIZING	MORETEX 70	MIXTURE OF WATER INSOLUBLE
COTTON	MORETEX 85	MIXTURE OF WATER DISPERSIBLE FATTY ACID AND FATTY GLYCERIDE DERIVATIVES
SYNTHETICS	MOREPEL RW	AQUEOUS DISPERSION OF PARAFFIN AND ALUMINUM ACETATE
WATER REPELLENT		

MORETEX Chemical Products, INC. Spartanburg, S.C.

ESTABLISHED 1908

effects that have not been practical before. It also offers lasting beauty and uniformity of color.

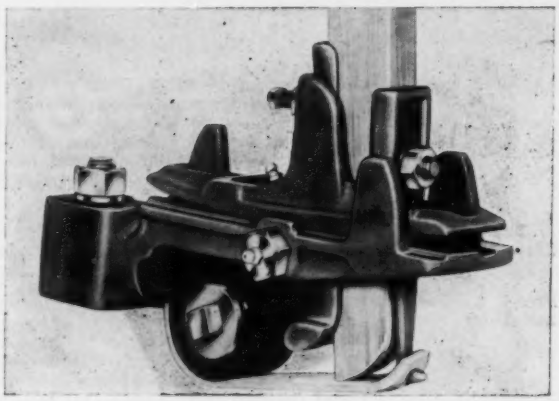
Eastman Chemical Products, Inc., 260 Madison Ave., New York 16, N.Y.

Do you want more data? Write supplier or use card on page 177; list G-202

Outstanding resistance to the effects of sunlight is a characteristic of a recently announced polypropylene fiber called Royalene UF. Developed chiefly for outdoor furniture webbing, the fiber has twice the sun life of comparable polypropylenes. Also, it has greater initial tensile strength and can be made in brighter colors.

Royalene Dept., United States Rubber Co., Providence, R. I.

Do you want more data? Write supplier or use card on page 177; list G-203



Assure true shuttle flight with machined parts

Availability of precision-machined parallel and picking motion parts especially designed for Draper looms is announced.

Machining of the special pearlitic malleable alloy of which the parallel and parallel shoe combination is made, plus specific design and engineering for lighter weight and greater efficiency, produce a perfectly aligned motion of the picker along a smooth parallel path. In this way, erratic boxing conditions caused by rough castings and unfinished paralleling parts are eliminated. True shuttle flight is assured; shuttle life increased.

The parallel has two additional ears to eliminate jump and side play, and is precision-machined flat and parallel with the bore of the rocker shaft. The parallel shoe is also precision-machined to the exact radius required to parallel the shuttle. Case hardening of both parallel and parallel shoe after machining increases resistance to wear and reduces downtime due to breakage.

The pick shaft, which is made of precision-machined, drop-forged, high-carbon steel, weighs 20% less and can absorb repeated impact shock at high loom operating speeds without fatigue breakage. Bearing journals are heat-treated. Shaft design produces torsion, which, together with light weight, reduces the over-all load on the power required to pick the shuttles.

H. F. Livermore Corp., Allston Station, Boston 34, Mass.

Do you want more data? Write or use card on page 177; list G-109

For IMPROVED and SPEEDED processing ... with REDUCED WASTE

MERROW NOW OFFERS ... *IN A SINGLE MACHINE*

- ***WIDER STITCHING***

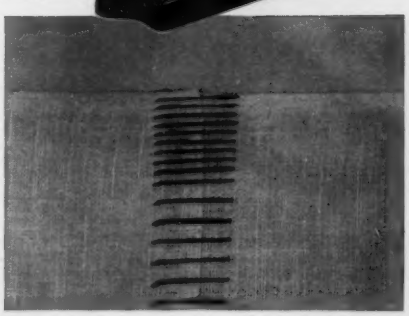
plus

- ***MULTIPLE STITCHING AT SELVAGES***

Some processors require a wide butted seam to eliminate "combing out" of coarse material under tension. Others, handling high count materials, need multiple stitching at the selvages for extra strength. Merrow now makes available a machine that fills **both** requirements.

The strong one thread seam (approximately 5/8" wide) is quickly and accurately formed by the high speed machine ... can be easily removed after processing. Result: improved processing ... higher production ... reduced waste.

Style 60 Y3B
Butted Seamer



Request complete information on this or other machines in the Merrow **complete line** of butted seamers.

TRADE MARK REG
The MERROW MACHINE COMPANY
2805 LAUREL ST. • HARTFORD, CONN. • U.S.A.

New dyes

For more information on one or more of these recently developed dyes, either write directly to the supplier whose name appears in Col. 5, or list the key number in Col. 6 on one of the handy return cards on page 177 and TEXTILE INDUSTRIES *will request the data for you.*

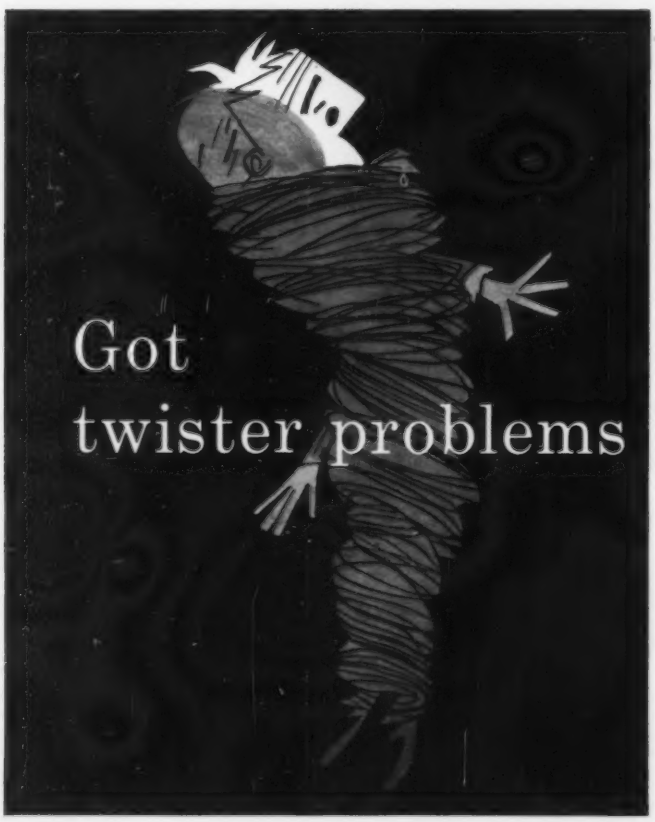
1 Class	2 Name	3 For use on	4 Remarks	5 Supplier	6 Key No.
Pre-metalized	Lanafast— Yellow RFL Orange RDL Bordeaux RLL Rubine BLF Violet BBL Navy NLF Black NBG	Wool, nylon, acrylics	Have superior light- and wet-fastness properties (Fade-Ometer rating 7-8); especially suitable for upholstery, carpets, men's and ladies' suitings, and sportswear fabrics. Have excellent washing and fulling fastness. Can be used with each other in compound shades.	Althouse	F-301
Nylon Special	Nylanthrene Green 2GFL	Nylon	Produces brighter green than obtainable with usual neutral dyeing fast nylon colors. Especially interesting for level dyeing of nylon piece goods. No staining in Launder-Ometer test at 140 F; Fade-Ometer rating 7-8.	Althouse	F-302
Neutral (Metalized)	Calcofast Neutral— Yellow R Red G Bordeaux 2B	Wool, silk, nylon, some acrylics	Combine good fastness properties with relatively short dyeing times. With the other Calcofast Neutral dyes, give a wide range of self or compound shades; many of the dyes leave cotton and viscose virtually unstained.	American Cyanamid	F-303
Fiber Reactive	Procion Rubine HBS	Cellulosics	Reported to have superior solubility and building-up properties to Procion Rubine H2BS, which it will largely replace. Main advantages are in printing—virtually complete absence of staining of whites in washing off, and higher solubility, permitting much higher concentrations.	Arnold, Hoffman	F-304
Fiber Reactive	Procion Brilliant Purple H3RS	Cellulosics	The 27th in the Procion line is a homogeneous reddish purple of excellent wash- and light-fastness, builds up well to deep shades. Lower reactivity contributes to print paste stability; high solubility makes it particularly suitable for padding. It is not dischargeable.	Arnold, Hoffman	F-305
Fiber Reactive	Remazol— Yellow GGL Yellow GR Brilliant Red BB Brilliant Blue B	Cellulosics	These additions to the Remazol series of vinyl sulfon reactive dyes bring to 15 the number of products in the range, all of which feature excellent fastness to washing.	Carbic-Hoechst	F-306
Insoluble Azo	Fast Grey Salts B and G	Cellulosics, polyester some acrylics	With naphthols, produce gray shades which are fast to light, washing, and chlorine, and are dischargeable.	Carbic-Hoechst	F-307
Insoluble Azo	Fast Blue Salt OT	Cellulosics, polyester, some acrylics	Contains new buffer system, eliminating any additions to the developing bath. Produces dischargeable navy blue shades on naphthols, fast to light and washing.	Carbic-Hoechst	F-308
Fiber Reactive	Cibacron Yellow G	Cellulosics, wool	Builds up well in exhaustion method; gives excellent yield by pad or Thermofix methods. Fast to resins. Suitable for printing; can be discharged to pure white with neutral discharges. Recommended for dyeing wool by the Neovadine method.	Ciba	F-309

1 Class	2 Name	3 For use on	4 Remarks	5 Supplier	6 Key No.
Disperse	Latyl Brown MS	Polyesters	Characterized by rich terra cotta shade, fast to light and wet processing. Of interest as replacement for orange in tan and brown shades. Especially recommended for 65/35 blends of Dacron-cotton.	Du Pont	F-310
Disperse	Latyl Red MG	Polyesters	A true red shade with good fastness to sublimation. Not sensitive to variations in pH and temperature. Does not change shade in alkaline dye bath when vats are applied to Dacron-cotton blends.	Du Pont	F-311
Vat	Ponsol Olive F Double Paste	Cotton and rayon	Outstanding characteristic is speed of return to normal shade after hot pressing or water spotting. Good fastness to peroxide bleaching and dry cleaning, little affected by copper and iron.	Du Pont	F-312
Pigment	Eccoblanc W-45-B	All fibers	Pigment white for roller printing or discharge printing. Excellent for overprinting on dyed grounds, since it contains noncuring binders, finely dispersed titanium dioxide, and permanent nonyellowing whitener.	Eastern Color & Chemical	F-313
Fiber Reactive	Reactone— Brilliant Yellow 4GL 140% Orange G 125% Red 2B 170% Violet BL Blue RLD Turquoise Blue FLG 160% Navy Blue GRL Black RL	Cellulosics	New line of fiber reactive dyes, distinguished by brilliance and wet fastness, for roller or screen printing.	Geigy	F-314
Neutral (Metalized)	Irgalan Brown GRL	Wool, nylon, and silk	Features excellent fastness to light, short dyeing cycles, and good solubility.	Geigy	F-315
Disperse	Genacron— Blue 3R Violet BN Blue GGL	Polyesters	Feature high color value, excellent buildup, and fastness to light, washing, perspiration, and hot pressing.	General Dyestuff	F-316
Pigment	Hartochrome Colors	All fibers	New series of water-phase pigment emulsions for printing.	Hart	F-317
Pigment	Hiltone	All fibers	Three new colors are available in the series—a brown, a red, and an orange—in both w/o and o/w systems.	Hilton-Davis	F-318
Insoluble Azo	Hiltonil Scarlet 2GS Base	Cellulosics, polyesters, some acrylics	The more easily diazotized sulfate of Fast Scarlet 2G Base, to which it is standardized at one-half strength.	Hilton-Davis	F-319
Pigment	Metrotex Superfast Colors	All fibers	New line of water-phase pigment printing colors, featuring fastness to washing and dry cleaning, with high wet and dry crocking fastness. Can be used to produce discharge effects on D & D and selected dyed grounds. Low crock additive not necessary except in very heavy and exceptionally strong shades. No foaming.	Metro-Atlantic	F-320

More new dyes on pages 168 and 169

New dyes *(Continued from page 167)*

1 Class	2 Name	3 For use on	4 Remarks	5 Supplier	6 Key No.
Fiber Reactive	Drimarene-Z	Cellulosics	A new line of fiber reactive dyestuffs, specially developed for printing, and featuring brilliance and wet fastness.	Sandoz	F-321
Fiber Reactive	Drimarene-Y	Cellulosics	New line of fiber reactive dyestuffs, for application by padding processes. In addition to the usual advantages of the reactives, these dyes offer excellent stability of padding liquor, virtual elimination of danger of tailing, no migration if intermediate drying is even, good stability to steam and dry heat, complete and easy removal of unfixed dye, and excellent shade reproducibility.	Sandoz	F-322
Vat	Sandothrene Golden Yellow NRK Double Paste Ultrasperse	Cotton and rayon	Recommended for pad-steam, Williams Unit, package, and pigment pad-jig methods; may also be printed by flash and conventional aging methods. Has good fastness to washing, light, and peroxide; is level-dyeing, non-migrating, and shows minimum of shade change with resins.	Sandoz	F-323
Neutral (Metalized)	Lanasyn Brilliant Red RL paf	Wool, silk, and nylon	Best dyed by the Lyogen SMK process. Of especial interest for printing, including Vigoureux printing, since it is highly soluble. Fast to light, milling, and carbonizing; readily dischargeable. Fast to cross-dyeing.	Sandoz	F-324



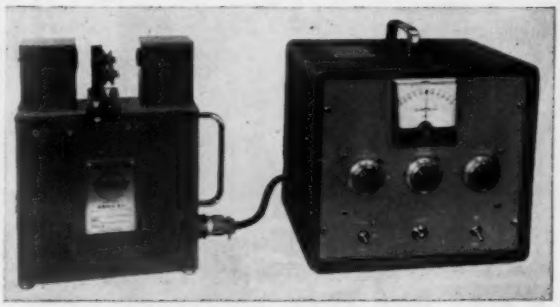
• • • Are you bothered by slow spindle speed? Troubled by yarn staining? Worried by down time? Plagued by production costs? Confused by countless twister problems?

Coats & Clark sales engineers can help you. We've been solving twister problems for all types of textile mills for over 20 years.

1 Class	2 Name	3 For use on	4 Remarks	5 Supplier	6 Key No.
Direct	Cuprofix Grey C-BL paf	Cotton, rayon, nylon, some acrylics	Distinctively neutral in tone, may be easily shaded with other dyes in the Cuprofix line. After-treatment with Cuprofix No. 52 or copper sulfate yields shades of good fastness to light and wet processing.	Sandoz	F-326
Fluorescent White	Leucophor ACR	Cellulosics	Optical whitener for resin treated goods, featuring resin-bath stability, nontailing, and retention of whiteness after laundering. Stability to zinc nitrate is a unique feature.	Sandoz	F-327
Fiber Reactive	Verofix—Brilliant Blue 3GL Yellow 4G	Cellulosics	First two representatives of a new range of fiber reactives in which severe washdown and accompanying staining have been virtually eliminated. Light fastness not affected by resin treatment.	Verona Dyestuffs	F-325

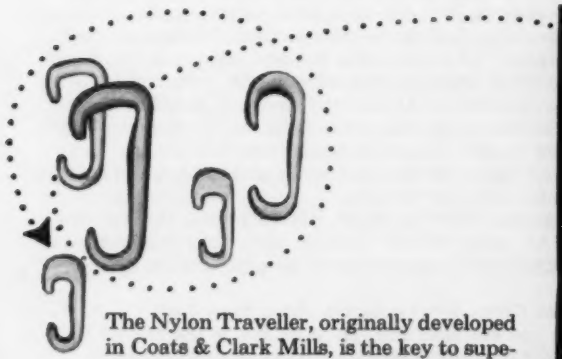
Photoelectric device for quality control use

► *Displayed in Atlantic City*



The Lindly "Dyna-Micro-Gage" is a compact, highly sensitive photoelectric device for measuring minute changes in light. Textile mill applications include: the continuous measurement of the diameter of yarn, thread, cord, fishing line, etc.; continuous gauging for width of tape, etc.; continuous measurement of small changes in strength of chemical solutions, mixtures, dispersions, etc.; for linear measurements; as a comparator.

The apparatus is capable of accurate dynamic measure-



The Nylon Traveller, originally developed in Coats & Clark Mills, is the key to superior twisting performance. Over 270 different styles and types of Coats & Clark Nylon Travellers are now available. And our sales engineers, who are experts in Traveller application, are ready and able to work with you in your own mill. They will show you how you can improve twisting room performance, increase speed and quality, and cut production time and costs.

So if you have twisting problems—write or wire us today . . .

COATS & CLARK INC.

NYLON TRAVELLER DIVISION
1292-98 McCarter Highway, Newark, N. J.

TO GIVE YOUR OPENING ROOM SOME SERIOUS THOUGHT!

The installation of a Cen-Tennial Opener Unit, Comprised of the Cen-Tennial Aerator, Opener-Cleaner, Separator-Cleaner and Cen-Tri-Vac can make your opening room a more profitable operation.

This unit stops damage to stock and prevents excessive waste of fiber. A Cen-Tennial Sales Engineer will be happy to call and discuss the system with you, giving you names of mills who can verify its advantages.

OPENS—CLEANS—BLENDS

CEN-TENNIAL HAS BEEN MILL-CONDITIONING COTTON FOR MORE THAN 75 YEARS

"FROM FIELD TO FABRIC"

CEN-TENNIAL

COTTON GIN COMPANY

COLUMBUS, GEORGIA

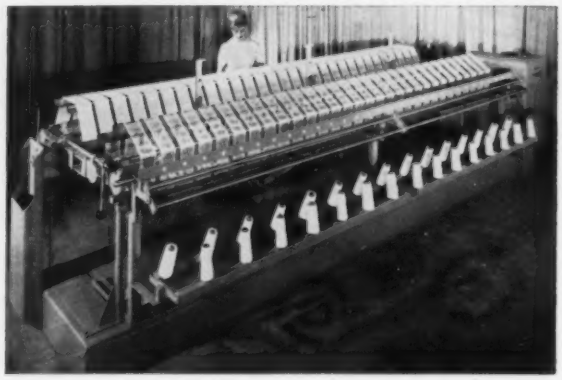
ments down to ½ micron or less. Since it is photoelectric, material being measured is not contacted and humidity does not affect its accuracy. The unit is stable and relatively unaffected by temperature changes. Drift is minimized, and instrument requires only occasional resetting when used at higher levels of sensitivity.

Foster Machine Co., Lindly Div., Westfield, Mass.

Do you want more data? Write ☁ or use card on page 177; list G-110

Efficiently makes muffs at 1000 ypm

► *Displayed in Atlantic City*



Muffs of textured yarn that weigh up to 1 lb may be produced at speeds up to 1000 yards per minute on the Croon & Lucke Change Reeling Machine, Model W 400 K, without impairing the quality of the yarn. Also suitable for reeling fine cotton and worsted yarns, the machine is equipped with twin reels which can be quickly transposed in position by lever control. Winding proceeds on one reel while the other remains stationary for tying and doffing; thus operator efficiency is very high.

The machine is fitted with finely adjustable tension devices and predetermining counters for winding any desired length of yarn. Stepless control of reeling speed and reel circumference, end-down stop motion, and speed indicator are other features.

Available with up to 30 reeling points, the machine may be easily doffed without disturbing the yarn so that dyeing and rewinding may be efficiently accomplished.

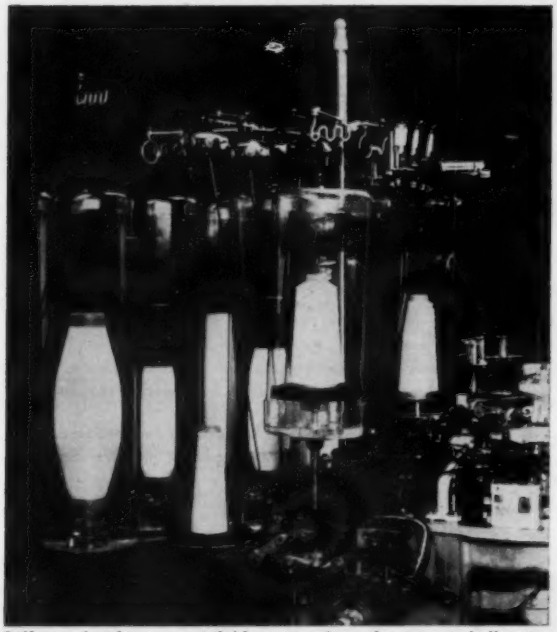
Cosa Corp., 405 Lexington Ave., New York 17, N. Y.

Do you want more data? Write ☁ or use card on page 177; list G-111

On-machine-humidification for seamless yarns

The high levels of humidity (80% to 95%) which have been found to be desirable for improving fabric quality in seamless hose can be produced economically locally around each cone or pirn on the knitting machine by using Fidelity Humidifying Containers on each yarn supply package. With these containers on seamless hose knitting machines it is not necessary to subject personnel in the knitting room to the discomfort caused by high humidity, corrosion of machines by excessive moisture in the air is avoided, static electricity effects are reduced to nothing, and yarn packages are protected from drafts.

In the case of welt yarns, the water is placed in the bottom of the container, which produces almost 100% humidity. (It is preferable to pre condition welt yarns before placing them on the machine.) With 15 denier leg



Different heights are available to produce the correct ballooning from cones, small and large pirns. Note that containers in center have small plastic water containers with limited evaporative area compared to the two outside units.

yarns, the water is placed in one or two 10-dram plastic containers which stand in the bottom of the humidifying container. Approximately 90% relative humidity is obtained by this means, and the limitation of the evaporative area prevents over-saturation of 15 denier yarns on large pirns, which is inclined to produce undesirable drag on partly used packages. (15 denier yarn packages are placed directly on machine from supply source, no preconditioning being necessary or desirable.)

The amount of water used in this system is quite small, and containers need refilling only at intervals of about 10 days. It is preferable to use distilled water as this reduces the cleaning necessary.

Fidelity Machine Co., Inc., 3908-18 Frankford Ave., Philadelphia 24, Pa.

Do you want more data? Write ◂ or use card on page 177; list G-112

Finishes and chemicals

A resin for use in fabric coatings for awnings, upholstery, lawn furniture, seat covers, and industrial and household gloves imparts excellent ultraviolet, abrasion, chemical, and water resistance and good flex life to the goods. Called Pliovic WO, this specialty vinyl dispersion resin for compounding quality plastisol and organosol formulations also provides excellent adhesion to many surfaces, good heat and light stability, and improved electrical properties. High molecular weight results in good strength, while particle size and distribution contribute to unusually good plastisol flow characteristics.

Chemical Div., The Goodyear Tire & Rubber Co., Akron 16, Ohio.

Do you want more data? Write supplier or use card on page 177; list G-204

A fuller body on nylon hosiery is provided by Resin BDC. In belt, tray or air drying, the hose will not stick. Also adaptable to the conventional post boarding drying

SOURCE

of supply for textile equipment services & materials

SOURCE

of information on new equipment, materials and services made commercially available last year

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of free literature

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of helpful information through advertising

Textile Industries

BUYER'S GUIDE

A copy of which you will receive in mid-September 1960

USE IT!!

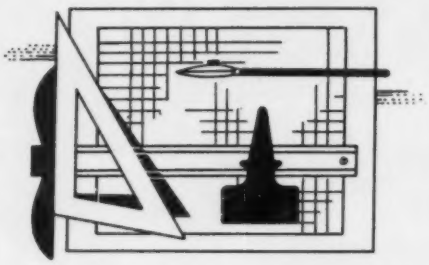
ENGINEERED PRODUCTS . . .

QUALITY WORKMANSHIP FOR ALL INDUSTRIES.

JENKINS Engineered Products are engineered by men who for nearly half a century have pioneered improved metal products . . . for mills and manufacturers that have moved forward with quality products and merchandise.

JENKINS covers the entire Textile Industry in the manufacture and sale of textile sheet metal parts and general sheet metal fabrication, stampings, machine work, plate and structural fabrication work. JENKINS, also, solicits inquiries from all industries requiring their services which have been greatly diversified, including Stamping and Contract Manufacturing.

For example, JENKINS Metal Shops now are sole manufacturers of a new aluminum carrying tray for hospitals that has national recognition and distribution.



JENKINS Engineers are now pioneering the "even-better" products of the future. To be sure you're getting the *newest* advantages *first*, standardize on JENKINS Engineered Products.

Your inquiries will be greatly appreciated. Estimates given on any special job. We can give you prompt service.

SINCE 1912 JENKINS METAL SHOPS INCORPORATED ENGINEERED PRODUCTS

JENKINS METAL SHOPS, Inc.

P. O. BOX 1160

GASTONIA, NORTH CAROLINA

AT YOUR SERVICE!

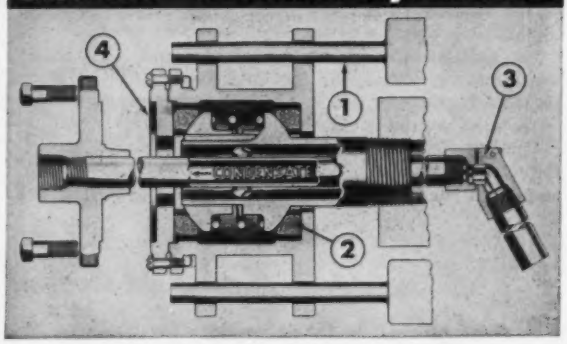
Southern Sizing's skilled technicians are available to your mill at any time, with service that will make your work run better.

Service Sells Size and Southern Sizing Salesmen Sell Service . . . AND good old Southern Size.

SOUTHERN SIZING COMPANY

EAST POINT, GA.

For service on Dry Cans and 30" Slasher Cylinders



Type LJSP with Syphon Elbow

1. Support rods carry all the real weight. Sealing assembly "floats" freely inside. **2.** Seals without packing—needs no lubrication or adjusting. **3.** Syphon elbow replaces clumsy curved syphon pipe with two straight pipes, passes right through joint. **4.** Assembly plate holds parts in place when head is removed.

Johnson ROTARY PRESSURE Joints *First* in the Textile Industry

Write for Catalog J-2002

Shows Johnson Joints for all needs, on dry cans, print cans, calenders, compressive shrinkage ranges, 5' and 7' cotton slashers, etc.

THE JOHNSON CORPORATION

815 Wood St., Three Rivers, Mich.

method, the new resin improves the resistance of hosiery to snagging.

W. F. Fancourt Co., 516 S. Delaware Ave., Philadelphia 47, Pa.

Do you want more data? Write supplier or use card on page 177; list G-205

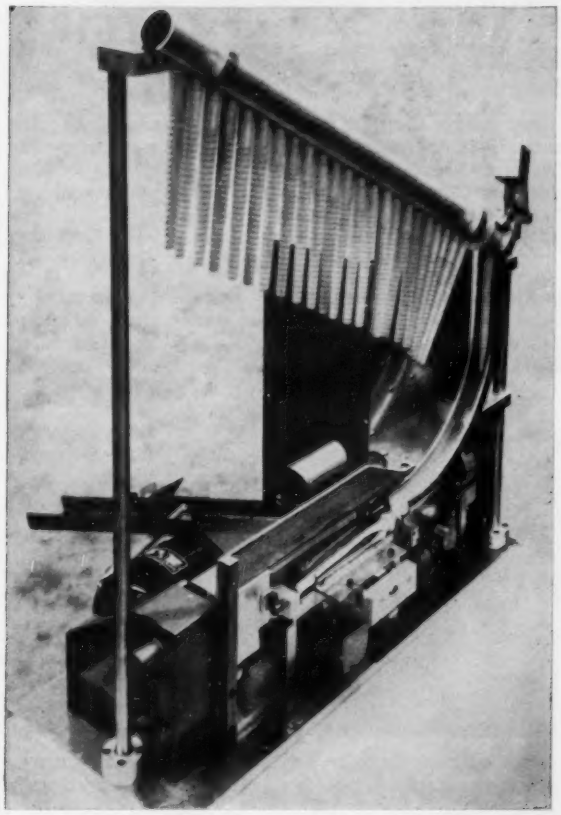
Removal of heavy, oily or waxy soil from most fibers and fabrics is facilitated by Fantex "O&W", a clear, viscous-type scour. Speed with which it works and lack of odor carryover are especially desirable. Because of the low foaming property of the product, it may be used on package machines, jigs, and Burlington units. Especially recommended for washing wool sweaters, particularly when garments are made from garnetted stock and a high percentage of grease is present.

W. F. Fancourt Co., 516 S. Delaware Ave., Philadelphia 47, Pa.

Do you want more data? Write supplier or use card on page 177; list G-206

Rejects quills with too much run-out

► *Displayed in Atlantic City*



Run-out on quills from 7⅜" to 9½" in length may be checked at a rate of 60 quills per minute on the Quil-Chek, an instrument developed by West Point Mfg. Co.

The instrument will automatically pass or reject quills based on runout and thus will permit their being removed from production to avoid possible bad work. The unit can be fed by existing quill lines or fitted with a special quill feeding system.

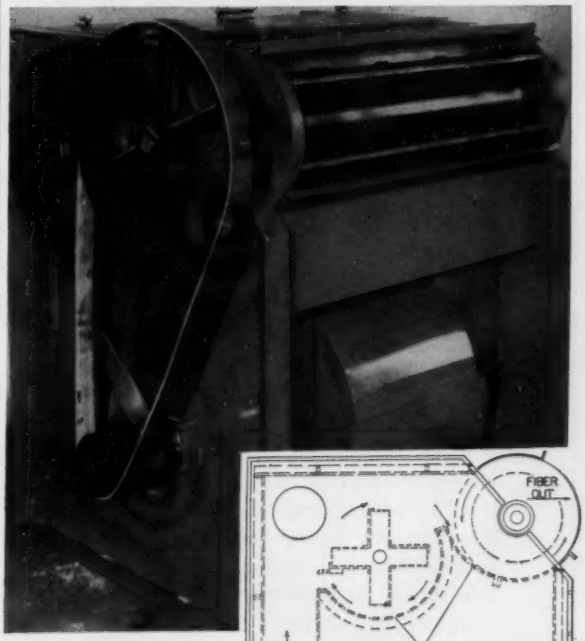
Custom Scientific Instruments, Inc., 541 Devon St., Kearny, N. J.

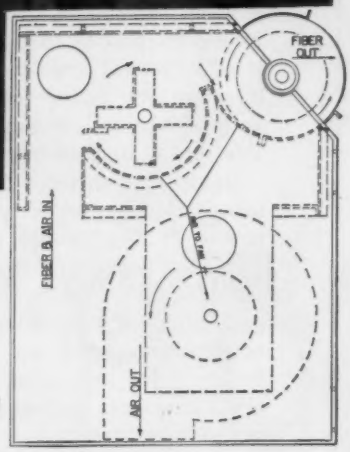
Do you want more data? Write ◄ or use card on page 177; list G-113

FIBER CONTROLS → FC-83

SCREENLESS CONDENSER

HEAVY DUTY — HIGH PRODUCTION
SELF-CLEANING CONDENSER





Model FC-83
SCREENLESS CONDENSER,
made for Heavy Duty & High Production, has proven itself in efficiency & capacity production.

Will handle up to 2000 pounds of fiber per hour through ducts approximately 200 feet in distance.

It contains 2 Doffer Blades and 2 Separator Plates and a 16 inch self-contained Fan with 24 inch diameter.

It will discharge fiber without:
— Tumbling
— Rolling or
— Pilling.

Inquire about more complete details of this equipment. Call or write:

U. S. Sales Agents:
PARROTT and BALLENTINE, Inc.
3440 Augusta Road, Greenville, S. C.

FIBER CONTROLS CORPORATION
BOX 1358 GASTONIA NORTH CAROLINA

New
Liquid Cleaner
OAKITE 202

Cleans everything . . . economically

A new, "use it everywhere" liquid detergent—Oakite 202—now offers the greatest convenience ever in cleaning. It goes into water solution quickly without waste . . . without fire hazard. You spray, mop or brush it on.

Oakite 202 forms a rich, sudsy solution that's packed with cleaning power. It cuts through grease-soaked lint, scuff marks, oil. Use it throughout your mill. It cleans up grimy concrete, makes wood floors spotless. It brightens painted walls and woodwork; gives lint-laden, oily machinery a new look. It dries down without streaking.

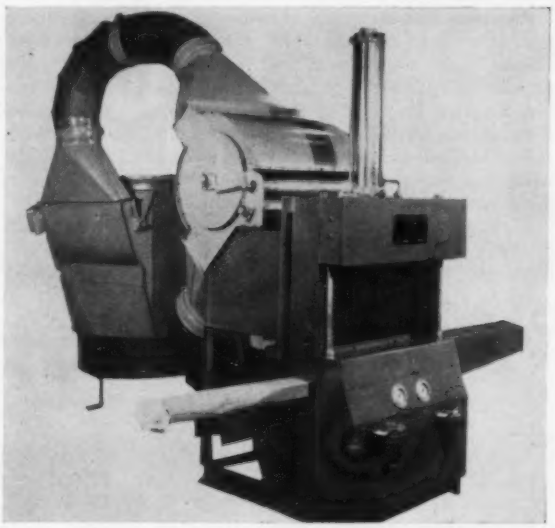
But—best of all—Oakite 202 in mild solutions out-performs strong solutions of other cleaners. This makes it a most economical all-purpose material.

Ask your Oakite man for a convincing on-the-spot demonstration. Or send for free bulletin to Oakite Products, Inc., 42 Rector Street, New York 6, N. Y.

OAKITE
over 50 Est. 1909 SCIENCE
years' leadership in industrial cleaning

Equipment briefs

Fully representative samples of cotton in a bale are produced by a new automatic cotton sampling machine, the Lab-Quip Sampler. Samples include cotton segments

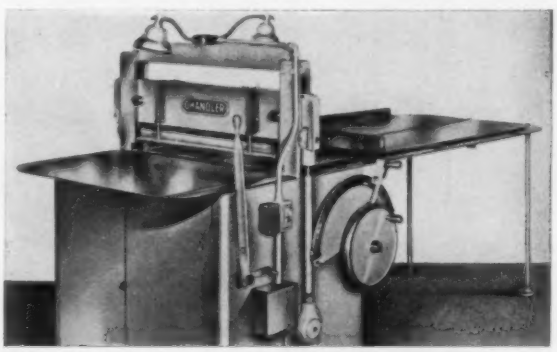


taken during the first 20 - 40 seconds and last 20 - 40 seconds of the baling operation. A minimum of seven segments per bale is taken by the machine. To achieve accurate timing required, the unit employs air controls.

Lab-Quip Engineering Corp., Shreveport, La.

Do you want more data? Write supplier or use card on page 177; list G-207

An automatic swatch cutting and pinking machine is designed especially for mill merchandising and advertising departments required to produce large numbers of fabric sample books and swatches. Speed, safety, and ease



of use are benefits to be derived from the electric-power-operated machine which features a fully automatic operating cycle.

Chandler Machine Co., West St., Ayer, Mass.

Do you want more data? Write supplier or use card on page 177; list G-208

Durable resin for water treatment systems. Amberlite 200, a high capacity, strongly acidic cation exchange resin, has unusual chemical and physical stability built into the polymeric structure. Particularly recommended for use in treating water supplies that cause standard resins to de-crosslink, for "hot-lime-zeolite" processes, and for mixed-bed deionization, the new resin offers (1) a whole bead content of close to 100%, (2) few, if any,

internal cracks, (3) unusually good resistance to oxidative attack, and (4) excellent resistance to fracture.

Rohm & Haas Co., Washington Square, Philadelphia 5, Pa.

Do you want more data? Write supplier or use card on page 177; list G-209

"Baby-size" fabric cutter replaces shears. Designed particularly for small shops and for cutting trimmings and individual or sample lots is the new Eastman Model BB round knife cutting machine which stands but 7" high, weighs less than 3 lb, and is fitted with a 2½" knife. The machine is easier to operate than shears and does a better job of cutting. It will cut a single ply or several layers up to ½" high. Prelubricated motor needs no oiling. Spiral gears drive knife at top speed smoothly and quietly.

Eastman Machine Co., Buffalo 3, N.Y.

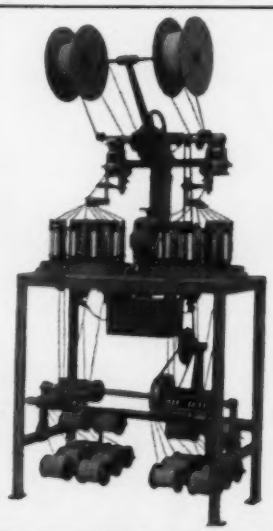
Do you want more data? Write supplier or use card on page 177; list G-210

A 4000-lb capacity electric fork truck of the cushioned-tire rider-type is equipped with carbon pile drive control that provides constantly smooth (stepless) acceleration for operations in which loads must be placed carefully, delicately. Fully loaded, the EC-40 can climb a ten-per-cent grade and can travel up to 6.2 mph forward or reverse. With standard upright, its lift speed loaded is 36 fpm and lowering speed is 70 fpm—outside turning radius is 70 inches.

Clark Equipment Company, Industrial Truck Division, 24th St., Battle Creek, Mich.

Do you want more data? Write supplier or use card on page 177; list G-211

Wide-angle, square-spray spray nozzle. A new spray nozzle that provides a full square spray pattern and extremely wide angle projection is designed for installation on spray manifolds where open area is dimensionally limited. The average spray angle of 110° provides wide coverage within a short distance between nozzle and work. Square spray



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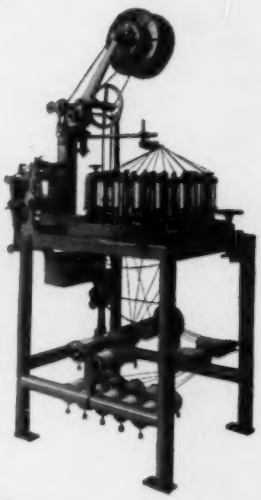
Machine Construction

Villmergen/Switzerland



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Beams for all makes of
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NYAF CENTER-SUSPENDED
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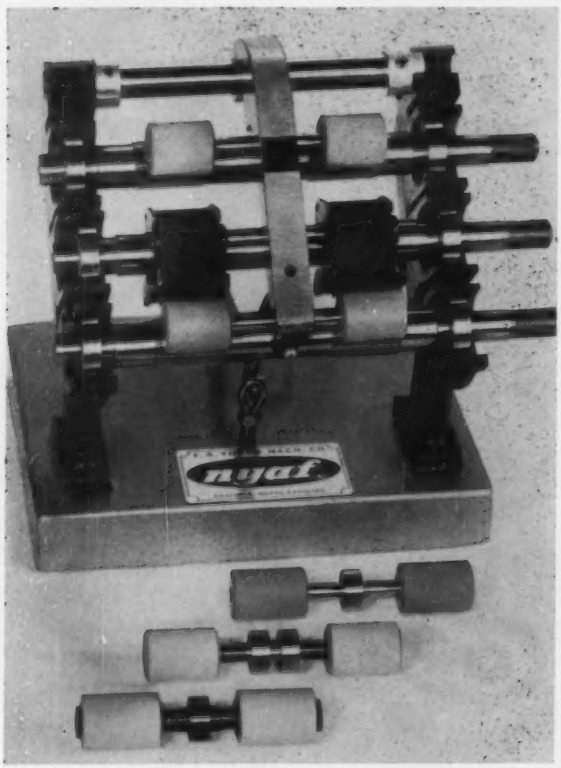


PROVEN **NYAF** DRAFTING
SYSTEM FOR QUALITY
AND PRODUCTION

F. A. YOUNG MACHINE CO.

pattern on manifold, multiple nozzle installations permits keeping spray overlap to a minimum while still providing total coverage. Called Wide Angle Square-Spray Full Jet Nozzles, they are supplied in capacities ranging from 5.9 to 48 gpm at 30 psi.

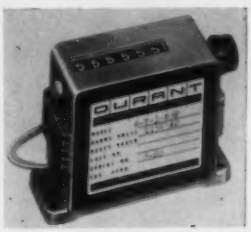
Spraying Systems Co., Bellwood, Ill.

Do you want more data? Write supplier or use card on page 177; list G-212

Panelboard for lighting and power loads. Ratings of NQO panelboards have been expanded so that protection for power loads can now be combined in the same panelboard with lighting and appliance circuits. Plug-in construction for on-the-job assembly is another feature. Basic devices available with main lug ratings up to 600 amperes. Type QO and Q1 plug-in branch circuit breakers are offered in one, two, or three-pole construction with ratings from 15 to 100 amperes.

Square D Co., 1601 Mercer Rd., Lexington, Ky.

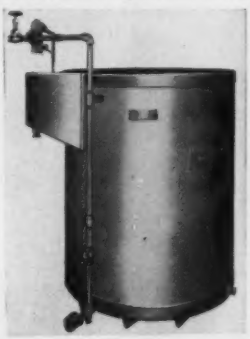
Do you want more data? Write supplier or use card on page 177; list G-213



An accurate electric counter recently announced is suitable for any application where a wide range of counting speeds is required. Designated as the Model 6-Y-1-RMF, the counter gives accurate counts at high, medium or low speeds and has a life rating of 30,000,000 counts at a speed of 1,000 counts per minute, with operating speeds up to 1200 cpm at normal voltage. It features a strong, silent, and fast operating solenoid, with a compact built-in rectifier for a-c operation Simple solenoid escapment mechanism has only one moving part, in addition to the plastic number wheels and reset shaft. Made of corrosion resistant materials.

Durant Mfg. Co., 1973 N. Buffum St., Milwaukee 1, Wis.

Do you want more data? Write supplier or use card on page 177; list G-214



Plastic and stainless steel units for making brine. Two new Brinemakers are available in the Model E Series: 1. The Model E-S is made of extra heavy, low carbon stainless steel to offer the utmost in durability, permanency, and cleanliness. All fittings are made of stainless steel or brine inert plastic to insure long life and easy maintenance. 2. The Model E-P is an all plastic unit made of heavy-wall, virgin plastic formula material. This light weight model is translucent and permits observation of the salt supply and liquid level through the tank wall.

Morton Salt Co., 110 North Wacker Dr., Chicago 6, Ill.

Do you want more data? Write supplier or use card on page 177; list G-215

A stretch yarn spindle bearing recently introduced provides high speed, smooth running, economical operation. Designed to operate at speeds in excess of 100,000 rpm, the bearing is double sealed with synthetic rubber and is equipped with two metal flingers to aid in keeping foreign elements from entering it.

Marlin-Rockwell Corp., 402 Chandler St., Jamestown, N. Y.

Do you want more data? Write supplier or use card on page 177; list G-216

TI'S INFORMATION CENTER

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FREE BOOKLETS

7-1 BRONZE GATE VALVE. Circular describes the Union Bonnet gate valve, including sectional views and table of dimensions. The Lunkenheimer Company, Cincinnati 14, Ohio.

7-2 INDUSTRIAL MIXERS. Brochure covers complete line of Shear-Flow Industrial Mixers, describing principle, function, and available sizes. Gabb Special Products, Inc., Windsor Locks, Conn.

7-3 TEXTILE RECEPTACLES. Bulletin describes Vulcanized Fibre Receptacles for handling textiles efficiently. National Vulcanized Fibre Company, 1060 Beech St., Wilmington 99, Delaware.

7-4 PLUG-IN BUS DUCT. Booklet contains descriptions, drawings, dimensions, specifications, etc., for plug-in bus duct. Request Number 30-661, Westinghouse Electric Corporation, P. O. Box 2099, Pittsburgh 30, Pa.

7-5 SPEED VARIATOR. Booklet describes adjustable-speed drive which uses the Thyratron tube to convert a-c to d-c power. Control is achieved over a wide, stepless range. Request bulletin GEA-7018, General Electric Company, Schenectady 5, New York.

7-6 FIBER PRIMER. Publication lists the official generic terms used in identifying natural and man-made fibers under the Textile Fiber Products Identification Act of 1960. Fibers Division, American Cyanamid Company, 111 West 40th Street, New York 18, New York.

7-7 WHITIN STANDARD SPINNING FRAME. Booklet describes frame which features 27" width, single balloon control ring, high angle roll stands, etc. Whitin Machine Works, Whitinsville, Massachusetts.

7-8 WINDING PRINCIPLES. Handbook deals with "Principles and Practices of Modern Winding," showing how modern winding can contribute efficiency and economy to product. Hobbs Manufacturing Company, 26 Salisbury Street, Worcester 5, Mass.

7-9 KIERALON B. Brochure decribes Kieralon B, a synergistic mixture of selected non-ionic products which are surface-active. Putnam Chemical Corp., Beacon, New York.

7-10 DOERR MOTORS. Brochure describes complete line of fractional and integral horsepower motors for both standard and special uses. Doerr Electric Corp., Cedarburg, Wisconsin.

7-11 V-BELT CATALOG. Catalog covers complete line of industrial V-Belts, as well as sheaves and industrial hose. Request catalog #260, Dayton Industrial Products Company, 2001 Janice Avenue, Melrose Park.

7-12 DYEING SYNTHETICS. Brochure contains material relating to the most important man-made fibers describing their dyeability, fabric properties, and color fastness. Booklet GS-66 Dyestuff and Chemical Division, General Aniline & Film Corp., 435 Hudson Street, New York 14, New York.

7-13 INDUSTRIAL CAPACITOR. Booklet tells how industrial capacitors may be used to reduce power costs and increase system capacity. Request Booklet B-7642, Westinghouse Electric Corporation, P. O. Box 2099, Pittsburgh 30, Pa.

7-14 TRI-CLAD "55" MOTORS. Booklet includes all basic information needed by most motor users for selection application and buying of these single- and three-phase, from ¾ to 150 horsepower motors. Request Bulletin No. GEC-1049, General Electric Company, Schenectady 5, N. Y.

7-15 ALLIS-CHALMERS CATALOG. Shows all the products of application to the textile industry in a special user catalog. Allis-Chalmers Manufacturing Company, Milwaukee 1, Wisconsin.

7-16 STRETCH YARN MACHINE. Brochure gives specifications and other details on high stretch yarn machine. Leesona Corp., P. O. Box 1605, Providence 1, Rhode Island.

7-17 HI-PILE FABRIC KNITTING MACHINES. Brochure gives details on "Hi-Pile" knitter for outerwear, linings, home furnishings and toy coverings. Wildman Jacquard Co., 1210 Stanbridge Street, Norristown, Pennsylvania.

7-18 STEEL HEDDLE PRODUCTS. Brochure describes various items available to the Textile Industry, including heddles, drop wires, frames, shuttles, etc. Steel Heddle Mfg. Co., 2100 West Allegheny Avenue, Philadelphia, Pa.

7-19 PHANTOM DRAFTING SYSTEM. Brochure gives details and drawings on new concept in drafting. Cole Engineering Corp., 4th Avenue at 32nd Street, Columbus, Georgia.

7-20 WARP DRAWING MACHINES. Booklet gives details of various Warp Drawing Machines, including pictures, application data, and specifications. Barber-Colman Company, Rockford, Ill.

7-21 FIBER LOCKER. Brochure gives details and specifications on needle felting machines for natural and synthetic fibers. James Hunter Machine Company. North Adams, Mass.

7-22 POLY-V-BELT DRIVES. Booklet describes design advantages of Poly-V-Belt Drives, including specifications, characteristics, etc., Dayton Industrial Products Company, 2001 Janice Avenue, Melrose Park, Ill.

7-23 BRUSHES FOR TEXTILES. Folder describes various brushes for textiles, including cylinder brushes and wood-backed brushes. M. W. Jenkins' Sons, Inc., 444 Pompton Avenue, Cedar Grove, Essex County, New Jersey.

BOOKLETS

raw stock to roving

T-101 **LUMMUS PEPPER - SHAKER OPENER.** Gives complete details and photographs. Aldrich Machine Works, P. O. Box 750, Atlanta, Ga.

T-102 **STATIC ELIMINATION.** How to eliminate static safely and inexpensively. Simco Co., 920 Walnut St., Lansdale, Pa.

T-103 **CARD GRINDING INFORMATION.** Care and operation of cards. B. S. Roy & Son Co., Worcester, Mass.

T-105 **VERSA - MATIC DRAWING FRAME.** Describes drafting elements, quality of sliver, roving and yarn possible. Saco-Lowell Shops, 60 Batterymarch St., Boston, Mass.

T-106 **SARGENT OPENER.** Describes opener with rotary evener and stripper. C. G. Sargent's Sons Corp., Graniteville, Mass.

T-107 **FEATHERTOUCH DRAFTING.** How to get "highest production per frame at lowest cost." Ideal Industries, Inc., Bessemer City, N. C.

T-111 **MAGNETIC IDEAS.** Booklet shows uses of permanent magnetic separation equipment in opening room as well as throughout mill. Removes tramp iron, prevents fires. Eriez Mfg. Co., Erie, Pa.

T-112 **ADVANTAGES OF ALDRICH PICKERS.** Good technical text, comprehensive pictures. Aldrich Machine Works, P. O. Box 750, Atlanta, Ga.

T-113 **NEW CONDENSER TAPE.** Describes Supr-O-Tape, an impregnated fabric condenser tape. Benjamin Booth Co., Allegheny Ave. & Janney St., Philadelphia 34, Pa.

T-119 **FIBER METER.** Automatic weighing and blending assures quality, holds variation to 1%. James Hunter, Inc., P. O. Box 298, Mauldin, S. C.

T-120 **PIN DRAFTERS.** Textile job report No. 21 tells how Warner & Swasey Pin Drafters help modify jute systems for carpet yarns. Warner & Swasey Co., 5701 Carnegie Ave., Cleveland 3, Ohio.

T-121 **UNIVERSAL CARD COILER.** Literature describes both head and base swivel for adjustment. Includes data on 90-day free trial. McDonough Power Equipment, Inc., McDonough, Ga.

T-122 **RECONDITION OPENING & CLEANING.** Bulletin gives whys and wherefores of reconditioning your opening and cleaning lines. Special attention given to each machine with suggestions as to parts replacement. Saco-Lowell Shops, 60 Batterymarch St., Boston 10, Mass.

T-123 **COILER CONVERSIONS.** Full facts on low initial cost conversion to larger coiler cans. Lists advantages, has complete description. Southern States Equipment Corp., Hampton, Ga.

T-124 **CARD DRIVE.** Bulletin 301-a describes simple, safe, efficient individual card drive. Southern States Equipment Corp., Hampton, Ga.

T-132 **PROCTOR SUPER PICKER.** Data sheet gives details of the Proctor Super Picker for use on slabs of baled cotton, or wool and synthetic blends in layers up to 12" thick. Proctor & Schwartz, Inc., 7th St. and Tabor Rd., Philadelphia 20, Pa.

T-133 **ANTI-STATIC AGENT.** Data sheet lists basic characteristics of liquid anti-static agent which eliminates processing difficulties with fibers due to static electricity. E. F. Houghton & Co., 303 West Lehigh Ave., Philadelphia 33, Pa.

yarn and warp making

T-201 **PRODUCTS FOR SPINNING AND WEAVING.** Complete line, applications, advantages shown. Dayco Corp., Textile Div., Dayton, Ohio.

T-202 **NEW BOBBIN MANUAL.** Complete bobbin guide. Lestershire Spool Division, National Vulcanized Fibre Co., Wilmington 99, Delaware.

T-203 **SPINDLE OIL.** "Gulfspin" insures against excessive wear and eliminates spindle wobble. Gulf Oil Corp., Gulf Bldg., Pittsburgh, Pa.

T-205 **HIGH SPEED AUTOMATIC QUILLER.** Lists advantages and dimensions of "Autocopser." Terrell Machine Co., Inc., P. O. Box 928, Charlotte, N. C.

T-208 **PACKAGED SPINNING MODERNIZATION.** Details on Collecto-Vac, Open-Aire Creels, Cross-Jet Cleaner, Air Conditioning. Bahnson Company, Winston-Salem, N. C.

T-209 **SECTIONAL WARPER.** Describes full width and sectional warpers for knitting, weaving. Robert Reiner, Inc., Weehawken, New Jersey.

T-210 **CONICAL RINGS AND FLYERS.** Complete details and specifications. Herr Manufacturing Co., Inc., 318 Franklin St., Buffalo 2, New York.

T-211 **PRECISE WINDING MACHINE.** For winding pineapple or straight cones and tubes of synthetics. Foster Machine Co., Westfield, Mass.

T-212 **AUTOMATIC CLEANING EQUIPMENT.** Working details and advantages of the Tri-Rail Cleaner. American MonoRail Co., 111 East 200th St., Cleveland 17, Ohio.

T-216 **SPINNING FRAME CONVERSIONS.** Big-package, new-frame results at half the cost. Meadows Mfg. Co., P. O. Box 10876, Station A, Atlanta, Ga.

T-217 **COLLECTO-VAC.** New development collects lint, fly and broken ends. The Bahnson Company, Winston-Salem, N. C.

T-219 **SPINNING AND TWISTER RINGS.** Complete details, pictures, price list. Whitinsville Spinning Ring Co., Whitinsville, Mass.

T-222 **SUCTION CLEANING SYSTEM.** Details on new Collector Unit Model C-4. Pneumafil Corp., Charlotte 8, N. C.

T-223 **FACTS ABOUT YOUR FLYERS AND SPINDLES.** Advantages of smooth flyer and spindle operation. Ideal Machine Shops, Bessemer City, N. C.

T-225 **LAPLESS ENDLESS SPINNER.** Full information available. Ton-Tex Corporation, 31 Columbus Ave., Englewood, N. J.

T-227 **SPINDLE OILING MACHINE.** Features and advantages noted. Wicaco Machine Corp., 4800 Stenton Ave., Wayne Junction, Philadelphia 44, Pa.

T-228 **HANDY SPINNING REFERENCE.** Shows traveler speeds, sizes of ring flanges. Saco-Lowell Shops, Parts Replacement Division, P. O. Box 327, Greenville, South Carolina.

T-229 **UNIRAIL UPTWISTER.** Higher yarn quality and better packages at faster speeds. Leesona Corp., P. O. Box 1605, Providence, R. I.

T-230 **PRECISION TEXTILE WINDING.** Tensions and density control for winding rubber cones. Kidde Textile Machinery Corp., Farrand St., Bloomfield, N. J.

T-231 **CONE WINDER.** Describes Model 102 winder, including applications. Foster Machine Co., Westfield, Mass.

T-232 **SHORT CUT TO STAPLE FIBER SPINNING.** Ten steps in operation of the Tow Stapler. Turbo Machine Co., Lansdale, Pa.

T-233 **WEAVER'S KNOTTER.** Instructions as to use, description. A. B. Carter, Inc., Gastonia, N. C.

T-234 **TEXTILE ROLL COVERINGS.** Describes complete line as well as other mill supplies. Armstrong Cork Co., Industrial Div., Lancaster, Pa.

T-239 **LARGE PACKAGE TWISTER.** Information on new anti-friction Jumbo Twister which carries a 14" bobbin with a 12" build. Meadows Mfg. Co., P. O. Box 10876, Sta. A, Atlanta, Ga.

T-241 **PACEMAKER TWISTERS.** Folder gives details on high production, outlines notable features. Whitin Machine Works, Whitinsville, Mass.

T-242 **RING SPINNING FRAME.** Folder presents description, illustrations and specifications of up-to-date Simplex ring spinning frames. Davis & Furber Machine Co., North Andover, Mass.

T-243 **ANTI-FRICTION TWISTER BEARINGS.** Find out how bearings helped make The Meadows Twister almost friction-free. Fafnir Bearing Company, New Britain, Conn.

T-246 **BETTER BEAMS.** Information on three ways to make better beams. Kidde Textile Machinery Corp., Farrand St., Bloomfield, N. J.

T-249 **VARI-SPEED MOTOR PULLEY.** Describes variable speed control through use of simplified three-major-part disc-assemblies with only one lubrication point. Reeves Pulley Co., Reliance Electric & Engineering Co., Columbus, Ind.

T-250 **SPINNING MODERNIZATION.** Booklet shows how lower costs and improved quality are obtained by spinning modernization. Roberts Company, Sanford, N. C.

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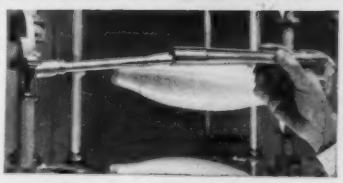

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BOOKLETS

T-255 **NEW BOBBIN HOLDER.** Details on streamlined, positive latching bobbin holder. Whitehead Die Casting Co., 1140 Zonolite Rd., Atlanta, Ga.

T-256 **HUMIDIFIER PROTECTION** — Brochure tells how "Rustex" can stop rust and corrosion and prevent discolored water in your humidifying system. Odorless and completely harmless to personnel, or goods. Anderson Chemical Co., Inc., Box 1424, Macon, Georgia.

slashing—weaving—tufting

T-301 **COUNTING AND MEASURING DEVICES.** Wide range of counting devices for all types of textile machinery. Veeder-Root, Inc., Hartford, Conn.

T-302 **LOOM SUPPLIES.** Describes complete line. E. H. Jacobs Northern Division, The Bullard Clark Co., Danielson, Conn.

T-304 **LOOM PRODUCTION CHARTS.** Celluloid card shows yards per loom per week. Ralph E. Loper Co., Greenville, S. C.

T-306 **THE STORY OF STARCHES.** History and information on manufacture and use of starches. National Starch & Chemical Corp., 750 Third Ave., New York 17, N. Y.

T-308 **STEEL WARP BEAMS.** Beams for both broadloom and narrow fabrics. Milton Machine Works, Inc., Milton, Pa.

T-309 **PENFORD GUMS IN TEXTILES.** Describes their excellent properties for warp sizing spun yarns. Penick & Ford Ltd., Inc., 750 Third Ave., New York 17, New York.

T-312 **AIR SLASHER DRYER.** Shows construction and operating details. Proctor & Schwartz, Inc., 7th St. and Tabor Rd., Philadelphia 20, Pa.

T-313 **BUTT-TACKING SEWING MACHINE.** Describes operation, installation of single thread butt-tacking sewing machine. The Merrow Machine Co., 28 Laurel St., Hartford, Conn.

T-314 **LOOM REED BOOKLET.** Describes in detail a variety of reeds. Steel Heddle Mfg. Co., 2100 West Allegheny Ave., Philadelphia 32, Pa.

T-315 **COCKER EQUIPMENT.** Information on warp sizer, beam warper, creels, tensions, back-winders, etc. Cocker Machine & Foundry Co., Gastonia, N. C.

T-318 **FORMULAS FOR SLASHING ARNEL.** Includes also information on warping, weaving and quilling. Textile Sales Dept., Celanese Corp. of America, P. O. Box 1414, Charlotte 1, N. C.

T-319 **ECLIPSE STARCHES FOR TEXTILES.** Data sheet describes use of thin-boiling starches in the textile industry, with particular emphasis on warp sizing. Physical and chemical data included. A. E. Staley Mfg. Co., Decatur, Ill.

T-321 **COCKER SLASHERS.** Complete specifications and advantages, including allied equipment. Cocker Machine & Foundry Co., Gastonia, N. C.

T-322 **MOUNTS FOR LOOMS.** Vinyl mount eliminates need for bolts or paste. Clark, Cutler, McDermott Co., 106 W. Central St., Franklin, Mass.

T-323 **UNIFIL LOOM WINDER.** Describes new concept of filling preparation which needs no quilling area. Leesona Corp., P. O. Box 1605, Providence, R. I.

T-324 **ALIGNING LAYS.** Setting instructions for step-by-step aligning. Draper Corporation, Hopedale, Mass.

T-325 **TRAVELING LOOM CLEANER.** Advantages of the new Oscillaire loom cleaner. Parks-Cramer Co., Fitchburg, Mass.

T-326 **DRAPER REPAIR PARTS CATALOG.** Contains illustrations covering all mechanisms and construction with complete listings. Draper Corporation, Hopedale, Mass.

T-327 **BALING PRESSES.** Describes complete line of motor-driven and hydraulic baling presses. Logemann Brothers Co., 3150 West Burleigh St., Milwaukee, Wis.

T-328 **TEXTILE MACHINERY PARTS CATALOG.** Describes complete line of Dayco and Thorobred textile parts. Dayco Corp., Dayton, Ohio.

T-329 **COUNTING DEVICES.** Describes complete line of counters for every application. Trumeter Company, 38 W. 32nd St., New York 1, New York.

T-331 **STATIC BARS.** Humorously illustrates how static can be overcome. The Simco Co., 920 Walnut St., Lansdale, Pa.

T-332 **CARE OF DRAPER SHUTTLES.** Describes how longer, trouble-free service may be obtained. Draper Corporation, Hopedale, Mass.

T-336 **ONE-PIECE SIZING AGENT.** Houghto-Size CW provides low kettle cost, results in free-running warp of high breaking strength, increasing weaving efficiency. E. F. Houghton & Co., 303 West Lehigh Ave., Philadelphia 33, Pa.

T-346 **FACTS ON NON-WOVENS.** Fact file on non-wovens tells of new machinery, new methods of handling fibers, new bonding agents, etc. Curlator Corporation, Textile Div., E. Rochester, N. Y.

T-347 **NEW DRYING SYSTEM.** Describes high capacity, custom engineered drying equipment for tufted plants. Dalton Sheet Metal Co., Inc., Dalton, Ga.

T-351 **AUTOMATIC STOP MOTION.** Complete information available on automatic stop motion for Titan warp tying-in machine. Edda International Corp., 468 Fourth Ave., New York 16, N. Y.

T-353 **BACKING FOR TUFTEDS.** How to get your tufting necessities with one telephone call. Fulton Cotton Mills, P. O. Box 1726, Atlanta 1, Ga.

T-355 **NON-WOVEN FABRICS.** Booklet gives outline of nature and history of non-woven and the manufacturing techniques of today. Booklet 56-219A, Chemical Div., Goodyear Tire & Rubber Co., Akron 16, Ohio.

T-358 **LOOM SUPPLIES.** Information on rod lubricant and applicator, sponge leather bunter, picker. Garland Mfg. Co., 54 Water St., Saco, Me.

T-362 **SIZE THAT SATISFIES.** Information on getting the correct size package for your mill. Also on Bingham line of slasher rolls. Stodghill & Co., 716 Ponce de Leon Place, Atlanta, Georgia.

T-363 **RUBBER COVERED SLASHER ROLLS.** Handy booklet tells how to get longer life and better performance from rubber covered rolls. Includes data on handling, storing and grinding. Stowe-Woodward, Inc., Dept. C, 181 Oak St., Newton Upper Falls 64, Mass.

knitting

T-401 **SINGLEHEAD FULL - FASHIONED MACHINE.** Literature on request from the Wildman-Jacquard Div., Draper Corp., Hopedale, Mass.

T-403 **RASCHEL KNITTER.** Describes new Raschel-type knitting machine. Kidde Textile Machinery Corp., Inc., Farrand St., Bloomfield, N. J.

T-406 **NEEDLE OIL DOES NOT STAIN.** Details on "Gulftex 39" developed for knitting mills. Gulf Oil Corp., Gross & PRR, Pittsburg 30, Pa.

T-407 **KNITTING MACHINES.** Information on Wildman "TFS" 30" single section F-F machines and "AL" 30" diameter 32-feed "single purpose" circular interlock machine (rib type) Wildman-Jacquard Div., Draper Corp., Hopedale, Mass.

T-409 **KNIT GOODS FINISHING MACHINERY.** Data on calenders, shrinkers, curers, extractors, steamers. Tubular Textile Machinery Corp., 33-61 54th St., Woodside, N. Y.

T-410 **"READING" TYPE 60 F-F KNITTING MACHINE.** Information about the new "Reading" Type 60, 38-section automatic full-fashioned hosiery knitting machine. Write Textile Machine Works, Reading, Pa.

wet processing

T-500 **WEBB GUIDE SYSTEMS.** Folio No. EG-84 describes webb guide systems for cloth applications. G.P.E. CONTROLS, INC 240 E. Ontario St. Chicago 11, Ill.

T-501 **TUBES FOR PACKAGE DYEING.** Describes Dytex tubes for one-time use. Sonoco Products Co., Hartsville, S. C.

T-502 **FINISHING MACHINERY.** Text and photographs of complete line of machinery. Marshall and Williams Corp., 46 Baker St., Providence, R. I.

T-503 **WATER ANALYSIS.** Includes tables, conversion factors, indicators, standard solutions. Solvay Process Div., Allied Chemical Corp., 61 Broadway, New York 6, N. Y.

T-504 **UREA FORMALDEHYDE.** Literature on urea formaldehyde or U.F. concentrate-85. Dept. CUFI-29-1, Nitrogen Div., Allied Chemical Corp., 40 Rector St., New York 6, New York.

T-506 **CATIONIC SURFACE ACTIVE AGENT.** Describes Uversoft "D." Harshaw Chemical Co., 1945 East 97th St., Cleveland 6, Ohio.

T-507 **CONTINUOUS STARCH COOKER.** Booklet shows how the use of continuous cookers for starch assures accurate control, economy, low maintenance in warp sizing and finishing. Clinton Corn Processing Company, Clinton, Iowa.

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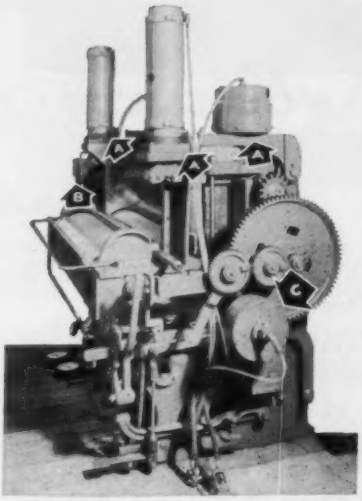

Photo above shows (A) Long Lap Control System installed on picker. (B) L&H Pneumatic Lap Pin Pusher. (C) Auto-Pneumatic Picker clutch.

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BOOKLETS

T-508 PEROXIDE BLEACHING SYSTEM. Illustrates and describes this continuous system. E. I. du Pont de Nemours & Co., Electrochemical Dept., Wilmington, Del.

T-510 TEXTILE CHEMICALS. Describes leading products for wet processors. Royce Chemical Co., Carlton Hill, N. J.

T-512 DEPUMA. Describes odorless, viscous, non-evaporating emulsion for anti-foam. Koppers Co., Inc., Chemicals & Dyestuffs Div., Porter Bldg., Pittsburgh 19, Pa.

T-513 CATALYST AC-6. Tells how curing efficiency may be stepped up as much as 25%. Monsanto Chemical Co., Plastic Division, Springfield 2, Mass.

T-514 SODA ASH BULLETIN. Contains useful data covering this subject. Solvay Sales Division Allied Chemical Corp., 40 Rector St., New York 6, New York.

T-516 ALUMINUM CHELATE PEA-1. Technical data sheet tells how aluminum Chelate PEA-1 may be used with advantage in many applications where aluminum is proplate is unsatisfactory. Harshaw Chemical Co., 1945 East 97th St., Cleveland 6, Ohio.

T-517 CHEMICAL CATALOG. Lists products with chemical composition, properties and applications. Antara Chemicals Div., General Aniline & Film Corp., 435 Hudson St., New York 14, New York.

T-519 HYDRAULIC POWER UNITS. Describes unit for operating hydraulic textile machines. B. F. Perkins & Son, Inc., Holyoke, Mass.

T-522 CUT WATER TREATMENT COSTS. Describes the control of scale, slime, algae and corrosion. Oakite Products, Inc., 126C Rector St., New York 6, New York.

T-526 PRODUCTS FOR TEXTILE IMPROVEMENT. Describes products and services designed to provide better fabrics. B. F. Goodrich Chemical Co., 3135 Euclid Ave., Cleveland 15, Ohio.

T-527 SODIUM HYDROSULFITE. Literature and test samples are available on "T-C Hydro." Tennessee Corp., 617-629 Grant Bldg., Atlanta, Ga.

T-528 ETHANOLAMINES. Lists application, chemical and physical properties. Nitrogen Division, Allied Chemical Corp., 40 Rector St., New York 6, New York.

T-531 ROTARY DYEING MACHINE For use in dyeing hosiery, hats, gloves, socks, etc. Turbo Machine Co., Lansdale, Pa.

T-534 DYEING AND FINISHING MACHINERY. Complete line presented in series of catalogs. Birch Brothers, Inc., 32 Kent St., Somerville 43, Mass.

T-535 DYEING, BLEACHING AND DRYING EQUIPMENT. Complete line for cotton, wool and synthetics described. Color pictures. Morton Machine Works, 1718 3rd Ave., Columbus, Ga.

T-536 NAPTHOL RATIOS SLIDE CHART. Quickly and accurately enables operators to determine Napthol Ratios. Alliance Color & Chemical Co., 33 Ave. P, Newark 5, New Jersey.

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T-541 REGENERATION OF ZEOLITE WATER SOFTENERS. Explains advantages of Lixate Process. International Salt Co., Scranton, Pennsylvania.

T-542 DYEING SYNTHETIC FIBERS. Detailed analysis of methods and materials. General Dyestuff Co., 435 Hudson St., New York 14, New York.

T-543 INDUSTRIAL BRUSHES. Features use on shears, printing machines. M. W. Jenkins' Sons, Inc., 444 Pompton Ave., Cedar Grove, N. J.

T-544 WASTE HEAT RECOVERY. Describes system of waste heat recovery from polluted water. Ludell Mfg. Company, 5200 West State Street, Milwaukee, Wis.

T-545 WASHERS FOR SCOURING, BLEACHING, ACIDIFYING. Describes high capacity, continuous process washers. C. G. Sargent's Sons Corp., Graniteville, Mass.

T-546 NAPHTHOL FOR LIGHTFAST BROWNS. Booklet describes new, straight, non-substantive naphthol. Naphthol As-BN, for the continuous naphtholation of cotton and rayon piece goods in the dyeing of economical, fast-to-light browns. General Dyestuff Co., 435 Hudson St., New York 14, New York.

T-547 SOFTENER LUBRICANT, NAPPING AID. Technical information available on softener, lubricant and napping aid for natural and synthetic fibers, yarns and fabrics. Nopco Chemical Co., Harrison, N. J.

T-548 HANDBOOK ON METHOCEL. Gives technical information and use data on family of methylecellulose ethers called Methocel. Organic Chemicals Sales, The Dow Chemical Co., Midland, Mich.

T-549 WALL CHARTS FOR HANDLING, TESTING H_2O_2. Two 16" x 21" wall charts available, one on handling and the other on testing H_2O_2. Becco Chemical Div., Food Machinery & Chemical Corp., Buffalo 7, N. Y.

T-550 POLYVINYL ACETATE EMULSION. Bulletin contains a description of Celanese emulsions and cites advantages of Celanese polyvinyl acetate emulsions in textile finishing. Celanese Chemical Co., 180 Madison Ave., New York 16, N. Y.

T-554 INSTRUMENT CATALOG. Complete information on industrial instrument accessories and supplies, Includes specifications, parts numbers and prices. Catalog 500, Foxboro Co., Foxboro, Mass.

T-556 HUNTER DYEING EQUIPMENT. Describes fully with diagrams Hunter Model A Dye Becks, Hunter No/Lap Reels, Model S Dye Kettles, Open Width Dye Kettles, Sample Dye Kettles. James Hunter Machine Co., North Adams, Mass.

T-557 HIGH ACTIVITY CATALYST. Technical bulletin describes new catalyst AC-6 which provides increased activity, excellent bath life, minimum odor formation, etc. Monsanto Chemical Co., Plastics Div., Springfield, Mass.

T-558 CATIONIC DYE LEVELER. Bulletin TX-34 gives new information on dye leveler for acid colors on nylon tricot and wool through use of Nopco 1425-B. Nopco Chemical Co., Textile Chemicals Div., Harrison, N. J.

T-559 FLOW CONTROL Complete information on largest selection of values to handle flow control requirements. William Powell Co., 2525 Spring Grove Ave., Cincinnati 22, Ohio.

T-561 PUMP POURABLE PASTES. Bulletin tells how Moyno pumps can pump any textile liquid that can be forced through a pipe, even if highly viscous or corrosive. Robbins & Myers. Inc., Springfield, Ohio.

T-563 POLYETHYLENE FINISHING AGENT. Booklet contains information needed to adopt Emulsifiable A-C polyethylene as a finishing agent to any particular process. Semet-Solvay Petrochemical Div., Allied Chemical Corp., 5th Floor T, Rector Street, New York 6, N. Y.

T-564 HYDROGEN PEROXIDE BLEACHING. Booklet discusses advantages, operating details and savings in chemical costs of Activated Hydrogen Peroxide Bleaching Process for Cotton Solvay Process Div., Allied Chemical Corp., 61 Broadway, New York 6, N. Y.

T-566 ETHYLEX GUMS. Brochure describes properties of hydroxy ethyl ether derivatives of corn starch. Applications of these noncongealing gums in warp sizing and finishing covered. A. E. Staley Mfg. Co., Box 151 Decatur, Ill.

T-570 CARPET DRYERS. Details, pictures, drawings on driven roll, conveyor, and tenter types. Andrews and Goodrich Div., 336 Adams St., Boston Dorchester, Mass.

T-572 DYEING MACHINERY FOR EVERY PURPOSE. Illustrated literature available on complete line of automatically controlled machinery. Gaston County Dyeing Machine Co., Stanley, N. C.

T-576 YARN PREPARATION. Describes products for yarn preparation, printing, finishing. Polymer Industries, Springdale, Conn.

T-577 STAINLESS DRY CANS. Information on stainless steel, 75 psi, reverse dished, head dry cans. Can be furnished Teflon-coated if desired. Sims Metal Works, West Point, Ga.

T-579 AUTOMATIC GUIDING EQUIPMENT. Catalog shows various types of automatic guiding equipment for accurate cloth guiding. Fife Mfg. Co., Inc., P. O. Box 9815, Oklahoma City, Okla.

fibers and yarns

T-601 FORTISAN-36, NEW TEXTILE FIBER. Includes charts, diagrams, text, presents technical properties. Textile Sales Dept., Celanese Corp. of America, P. O. Box 1414, Charlotte, N. C.

T-602 CAPROLAN NYLON HEAVY YARNS. Describes strength, long flex life and ready dyeability. Fiber Sales Dept., National Aniline Div., 261 Madison Ave., New York 16, N. Y.

T-603 RAYON—MILE BY MILE. Details on how rayon is produced mile by mile, perfect inch by inch. Industrial Rayon Corp., 500 Fifth Avenue, New York 18, N. Y.

T-604 THE CHEMSTRAND NYLON Story. Describes the birth and growth of Chemstrand Nylon. Chemstrand Corp., 350 Fifth Ave., New York 1, N. Y.

T-605 COLOR-FAST FIBERS. Further information on "Coloray," Courtauld's solution dyed rayon staple which is a contribution to color fastness in fabrics. Courtaulds (Alabama) Inc., 600 Fifth Ave., New York 20, N. Y.

T-606 "DIAL-A-FIBER" Ingenious circular chart indicates properties and compatabilities of "Uvitex" for application on natural and synthetic fibers. Ciba Co., Inc., Route 208, Fair Lawn. New Jersey.

T-608 TASLAN TEXTURED YARNS. Technical information on dyeing and finishing of new fabrics made with Taslan. E. I. du Pont de Nemours & Co., Wilmington 98, Delaware.

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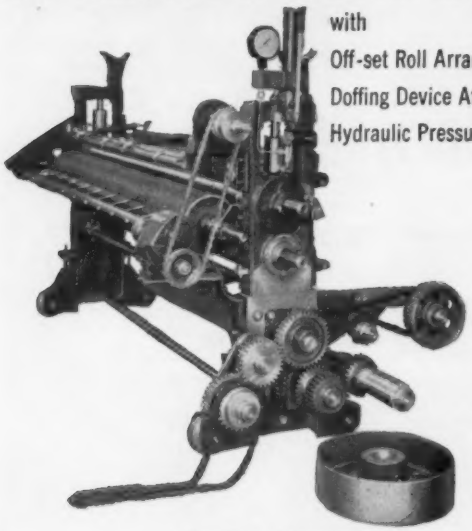

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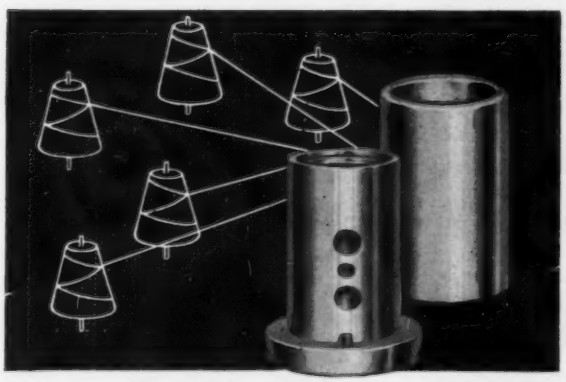

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BOOKLETS

T-609 PROCESSING NYLON STAPLE. Data sheet describes method of processing Du Pont 42 Nylon Staple in blends with cotton. Covers complete operation through sizing. Bulletin N-93, E. I. du Pont de Nemours & Co., Inc. Wilmington, Del.

laboratory

T-701 TESTING INSTRUMENTS. Descriptions of 37 instruments for testing textiles. Custom Scientific Instruments, Inc., 541 Devon St., Kearny, N. J.

T-703 SHADOGRAPH WEIGHING DEVICES. Pictures and information on various types of scales. Exact Weight Scale Co., Columbus 8, Ohio.

T-705 STROBOTAC. Measures speed of rotating, reciprocating or other cyclic motions. General Radio Co., West Concord, Mass.

T-706 YARN COUNT SCALE. Data sheet tells how direct-reading instrument provides fast, accurate method of determining yarn number. Exact Weight Scale Co., Columbus 8, Ohio.

T-712 AUTOMATIC MOISTURE CONTROL. Booklet tells how Hunter Electro-Psychrometers are used in measuring percentage of moisture in all classes of textiles, whether yarns or fabrics. Hunter Controls, Inc., Div., James Hunter Machine Co., North Adams, Mass.

services for management

T-801 FACTORING SERVICE. Details on advantages of factoring, including information on general banking and pension plans. Trust Company of Georgia, Atlanta, Ga.

T-802 NON-WOVEN FABRICS. Report includes how non-woven fabrics are made, machinery involved, sample fabrics. Textile Fibers Dept., E. J. du-Pont de Nemours & Co., Inc., Wilmington 98, Del.

T-805 PROFIT THROUGH FACTORING. Brochure gives facts on the use of factoring as a modern plan for developing sound business growth and added profits. Walter E. Heller & Co., Dept. TI-2, 105 W. Adams St., Chicago 99, Ill.

T-807 GROUP INSURANCE. Information on how textile group insurance can insure the happiness of your employees and make for a better running mill. Provident Life and Accident Insurance Co., Group Dept., Chattanooga, Tenn.

T-808 FACTORING. Complete details on services offered as mill factors. L. F. Dommerich, 271 Madison Ave., New York, N. Y.

T-810 THE WONALANCET WAY is the title of an editorial booklet published five times a year dealing with current problems. Write Wonalancet Company, 128 Burke St., Nashua, N. H.

T-812 BEECHCRAFTS FOR 1960. Booklet available from Southern Airways Company shows how Beechcraft executive airplanes can save executives time and money. Write Southern Airways Co., P. O. Box 718, Atlanta, Ga.

T-819 ORGANIZED LUBRICATION PAYS. Planning book entitled "Management Practices that Control Costs via Organized Lubrication" shows how to effect savings in five areas of plant operation. Available from Texaco, Inc., 135 E. 42nd St., New York 17, N. Y.

T-821 INVENTORY CONTROL. How a daily report of inventory condition mechanically producted on existing business machines showed a net direct payroll saving of more than 10,000 a year. Administrative Methods Dept., Werner Textile Consultants, 1430 Broadway, New York, N. Y.

plant operation

T-902 BELT LACING EQUIPMENT. Includes prices, specifications, etc. Clipper Belt Lacer Co., Grand Rapids, Michigan.

T-903 "MOTOR SELECTOR." How to select a-c motors for specific application. Bulletin B-2103. Reliance Electric & Engineering Co., 24701 Euclid Ave., Cleveland 17, Ohio.

T-904 GEARMOTORS, MOTORGEARS, AND FLUID DRIVES. Catalog supplies complete information on double, triple, and quardruple reduction gearmotors and motorgears. Electrofluid and fluid drives are also explained. Link-Belt Company, Dept. PR, Prudential Plaza, Chicago 1, Illinois.

T-907 WRAP UP LINT PROBLEMS. Automatic lint filter removes lint from air, winds it into disposable roll. Bulletin 234, American Air Filter Co., 275 Central Ave., Louisville 8, Ky.

T-908 TEXTILE MOTORS. Bulletin describes compete line of textile motors. Diehl Mfg. Co., Finderne Plant, Somerville, N. J.

T-909 COMPRESSORS. WB two-stage water-cooled. Space-saving units require modest foundation up to 125 psi and 1150 cfm displacement. Bulletin WB-10. Gardner-Denver Company, Quincy, Illinois.

T-910 MODERN LUBRICATION METHODS. A report to management tells how modern lubrication methods can help save thousands of dollars in three major economic areas of textile plant management. Describes twelve operating advantages of automatic lubrication systems. Lincoln Engineering Co., 4010 Goodfellow Blvd., St. Louis 20, Mo.

T-911 LEATHER BELTING. Selection, installation, proper maintenance. Atlanta Belting Co., 508-510 Whitehall St., S. W., Atlanta, Ga.

T-912 STORY OF NYLON BRISTLE. Tells of discovery and production, with special attention to "Tynex," a form of nylon ideal for use in brushes. M. W. Jenkins' Sons, Inc., 444 Pompton Ave., Cedar Grove, N. J.

T-913 "ONE-SHOT" LUBRICATORS. Bulletin describes wide field of application for one-shot lubricators on machines requiring closely controlled but infrequent oil feed. Bijur Lubricating Corporation, Rochelle Park, N. J.

T-914 INDUSTRIAL GREASES. Describes multi-purpose lithium soap industrial greases. Sinclair Refining Co., 600 Fifth Ave., New York, New York.

T-917 BLOWERS AND EXHAUSTERS. Full description, including detailed drawings. Buffalo Forge Co., 490 Broadway, Buffalo 5, N. Y.

T-918 PAINT STRIPPING BOOKLET. Explains simplified method of stripping paint. Oakite Products, Inc., 22 Thames St., New York 6, New York.

T-921 CATALOG OF NEEDLE BEARINGS. Design, application for five types of needle bearings. The Torrington Co., Torrington, Conn.

T-924 BALL BEARINGS FOR TEXTILE MACHINERY. Bearings for all phases of textile processing. The Fafnir Bearing Co., New Britain, Conn.

T-925 LUBRICATION OF BEARINGS. Helpful list of do's and don't to prolong bearing life. New York & New Jersey Lubricant Co., 292 Madison Ave., New York 17, New York.

T-931 NEW V-BELT DRIVES. Bulletin contains information on selection and operation of V-belt drives. Covers all types of V-belt drives. Dodge Mfg. Corp., Mishawaka, Ind.

T-932 SMOOTH ACCELERATION, DECELERATION. Describes eddy-current equipment for smooth, stepless acceleration and deceleration. Eaton Mfg. Co., 3307 14th Ave., Kenosha, Wis.

T-933 CATECHISM OF ELECTRIC MACHINERY. Booklet contains complete technical treatise on various electrical machines. Electrical terms defined. Fairbanks, Morse & Co., Fairbanks-Morse Bldg., Chicago 5, Illinois.

T-937 V-BELTS. Tells how raw materials and finished belts are tested and inspected. Quality control and experimental production covered. Booklet 5-51107, Dept. 794, Goodyear Tire & Rubber Co., Akron 16, Ohio.

T-938 EMERGENCY CHEMICAL CLEANING—Booklet tells how rust, scale and other deposits may be removed from heat exchange equipment, regardless of intricacy. Anderson Chemical Co., Inc., Box 1424, Macon, Georgia.

T-939 BOILER FEEDWATER TREATMENT. Bulletin describes BRAXON & FLAKO internal automatic boiler feedwater treatment and services of trained service engineers in eliminating the problems of scales, sludge, corrosion, etc. Anderson Chemical Co., Inc., P. O. Box 1424, Macon, Ga.

materials handling

T-1005 TRAMRAIL ENGINEERING AND APPLICATION. Data on how Tramrail equipment can cut handling costs. Cleveland Tramrail Div., Cleveland Crane and Engineering Co., 1036 East 289th St., Wickliffe, Ohio.

T-1007 MATERIALS HANDLING FOR TEXTILES. Shows how fibre trucks can increase efficiency, protect products. National Vulcanized Fibre Co., Wilmington 99, Del.

T-1013 TRUCKS DOFF, STORE, BECOME SPOOLER TRAY. Brochure tells how mobile boxes are being used as doff boxes, storage boxes, and spooler trays on Barber-Colman spooler. Fisher Mfg. Co., Hartwell, Ga.

T-1014 CARPET CORES, STORAGE TUBES. Literature on simplified storage and better cores for rugs. Sonoco Products Co., Hartsville, S. C.

T-1015 OVERHEAD CONVEYOR. Catalog features "Cable-Way" Overhead Conveyor which has low-cost, ease of installation, quiet operation and long life. Conveyor Division, The American MonoRail Co., Fourth and Franklin Sts., Tipp City, Ohio.

T-1016 GUIDE TO BETTER CLOSURES. For use as a guide for the evaluation of methods currently in use to effect economy and better production in the closure of fiber board boxes. Acme Steel Products Div., Acme Steel Co., 135th and Perry Ave., Chicago, Ill.

T-1020 AUTOMATIC WRAPPING. Tells how automatic packaging increases the sales appeal of textile products. Saves labor and materials and adds tamper-proof product protection. Write Hayssen Mfg. Co., Sheboygan, Wis.

T-1021 TUBES, BOBBINS, PIRNS. Information on world renowned yarn carriers, reliable as to stability, dimensions, weight. Emil Adolff (U. S. A. agents: Textube Corp., 695 Summer St., Stamford, Conn.).

T-1022 STRONG CORES. Data on lightweight, quality tubes and cores for textiles. Star Paper Tube, Inc., Rock Hill, S. C.

T-1023 MATERIALS HANDLING. Describes lightweight, smooth products. Spaulding Fibre Co., Inc., Dover, New Hampshire.

T-1024 CONDITIONING TRUCK. Details on all-aluminum, non-rusting conditioning truck. Excel, Inc., Lincolnton, N. C.

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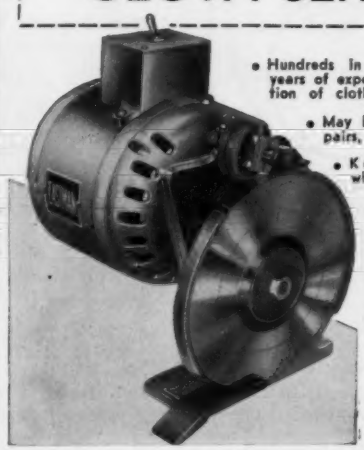

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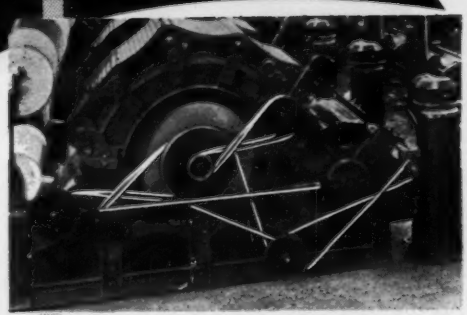

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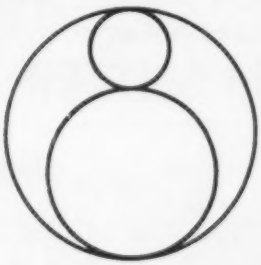
SHORTS & REMNANTS

(from page 14)

doesn't have a single one of the simple how-old-is-Ann type; they range from the merely very difficult to the exceedingly formidable. For instance, this is the first problem in the book, and one of the "easiest":



"A foreman noticed an inspector checking a 3" hole with a 2" plug and a 1" plug and suggested that two more gauges be inserted to be sure that the fit was snug. If the new gauges are to be just alike, what should their diameters be?"

This problem was originated by **Edward C. Varnum** of the Barber-Colman Co., Rockford, Ill. The best, or at least the simplest solution was supplied by **E. A. Terrell, Jr.,** of Terrell Machine Co., Charlotte, N. C. It works out that each of the two required gauges is 6/7" in diameter. You can solve the problem without too much trouble if you remember your geometry and trig.

The book (a paper-bound) is a collection of the best problems appearing over the last several years in Graham's house publication, *The Dial*. It's published by Dover Publications, Inc., and is available at $1.45.

Miscellaneous Wants

Information on ParaDrafters—**J. S. Norville,** Whitehead Mills, Dalton, Ga.

Information on Pin Drafters—**Z. H. Norville,** Whitehall Mills, Dalton, Ga.

Six copies of 1960 Review of Tufted Textiles ("By return air mail")—**R. Goldenberg,** United Merchants & Manufacturers, Inc., NYC.

Who makes the Shore Durometer mentioned in the last installment of Paul Seydel's "Warp Sizing" (TI for Dec., 1957)?—**A. Figari,** chief of service, Istituto Cotoniero Italiano, Milan, Italy. That's Shore Instrument & Mfg. Co., 90-35 Van Wyck Expressway, Jamaica 35, N.Y.

Six reprints of "Supply Control System," by John McArthur (TI for Aug., 1958)—**George S. Spinks,** cost engineer, Sachem Mills, Winder, Ga.

Reprints of "Highlights of the Labeling Law" (TI for Aug. 1959)—**R. H. Rohletter,** tech. dir., Chicopee Mfg. Corp., Cornelia, Ga.; **Joseph B. McGinnis,** Greenwood Mills, Inc., NYC; **Frank D. Dabney,** Dan River Mills, Inc., Danville, Va.; **Bernard Valente,** mgr., United Wadding Corp., Woonsocket, R. I.; **Broadus L. Glenn,** Glenn's Rug Mill, Chesnee, S. C.; **B. L. Pemstein,** pres., Whittaker Nylon Fibers, Worcester, Mass.; **Henry Kawtman,** v-p, E.M.E. Mills, Inc., NYC; **James P. Chadwick,** treas., Chadwick Yarn Co., Pawtucket, R. I.; **Theodore S. Bartwink,** Ace Dyeing & Finishing Co., West Warwick, R. I.; **Samuel J. Fox,** Trans American Spinning Mills, Fall River, Mass.; **John Fried,** Blue Star Knitting, Inc., Milwaukee, Wis.; **Nick Zaccarelli,** finisher, Glendale Textile Processing Co., NYC; **Philip Cupetspy,** Ria Herlenger Fabrics, Flushing, N.Y.; **Ray L. Hodgkins,** supt., Millstone Spinners, Hillsboro, N.H.; **G. E. Lipman,** Amerotron Co., NYC; **Donald F. Taylor,** engr., Bigelow-Sanford Carpet Co., Thompsonville, Conn.; **Philip E. Portner,** gen. supt., Century Ribbon Mills, York, Pa.; and **T. Barnett,** mgr., Barnett Woolen Mills, Milwaukee, Wis.

Information on "Upsheen" combing—**Floyd Ross,** comber fixer, Hay's Mills, Hudson, N. C.

Who makes machinery for producing ladies' hair nets?—**William R. Batorffy,** cons. engr., Sao Paulo, Brazil.

Photo Credit

The photograph on page 133 is of the "High Falls" of the Towaliga River, about 10 miles southeast of Indian Springs State Park, Ga. This shot of water in a real hurry was made by Margaret Perryman (Mrs. Francis C. Smith), noted amateur archaeologist and wife of the editor of our sister magazine in the W.R.C. Smith family, *Southern Power and Industry*. She is the author of numerous articles on prehistoric American Indians; these have appeared in scientific and popular magazines.

► Next month comes our annual special feature on the man-made fibers, including an up-to-the-minute revision of the chart, "Properties and Uses of the Man-Made Fibers," and a list of the current trademarks of man-made fibers, with the sales offices of fiber producers and owners of textured yarn patents.

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AFTERCOOLERS

PERSONAL NOTES

Dr. John P. Hollihan has accepted the position of director of the J. P. Stevens & Co., Inc., central research laboratory located in Garfield, N. J.

John M. Jenkins and **Kendall Greenwood** have been named directors of La France Industries, Inc.

William P. Tukey has been appointed general manager of the Hoosac Mills division of the Hoosac Mills Corp., a subsidiary of Indian Head Mills, Inc., succeeding William M. Butler, who has resigned.

Edwin Wilkinson, president of the National Association of Wool Manufacturers, was recently granted honorary membership in the National Association of Woolen and Worsted Overseers.

A. Alex Shuford, Jr., president and treasurer of Shuford Mills, Inc., Hickory, N. C., was recently awarded an honorary degree of Doctor of Business Administration from the Catawba College.

At the annual meeting of the Eastern Townships Textile Association held in Sherbrooke, Quebec, recently, **James B. Conner,** divisional superintendent of dyeing, Dominion Textile Co., Ltd., was elected president. Other officers elected were: 1st vice-president — **Jean Tremblay,** Bruck Mills, Ltd., Sherbrooke; 2nd vice-president — **Benoit Lachapelle,** Canadian Celanese, Ltd., Coaticook; secretary — **Ron MacMillan,** Paton Manufacturing Co., Ltd., Sherbrooke; treasurer—**J. Nobrega,** Domil, Ltd., Sherbrooke.

Horace C. Jones, formerly vice-president and treasurer of James Lees and Sons Co., has been elected president of the company succeeding **Joseph L. Eastwick,** who has been named chairman of the board of directors. Mr. Eastwick will continue as the chief executive officer. Mr. Jones and Mr. Eastwick have been elected to the board of directors of Burlington Industries, Inc. * * * **Bruce W. Duddy** has been named secretary and treasurer.

Donald B. Tansill has relinquished his duties as chairman of the board of directors of M. Lowenstein and Sons, Inc. Mr. Tansill will continue as a consultant and director of the company. **Leon Lowenstein,** executive chairman of the board, has assumed the duties of both positions.

Roy Deaton has been appointed safety director of Cannon Mills Co., Kannapolis, N. C., succeeding **Malcolm B. Bishop, Jr.,** who has been transferred to the cotton department. * * * **W. J. Richards** has been named assistant vice-president of the company.

John G. Rothell has been named assistant superintendent of Union Bleachery, Greenville, S. C.

Dr. Howard J. White, Jr., director of research at Textile Research Institute, has resigned.

Carl J. Seifert, Sr., has been elected a vice-president of Amphenol-Borg Electronics Corp.

Robert P. Shapard, Jr., president of Spalding Knitting Mills and president and treasurer of American Throwing Co., Inc., was recently named "man of the year" of Griffin, Ga.

At the 95th annual meeting of the National Association of Wool Manufacturers held in New York City recently, **Edwin Wilkinson** was re-elected president. Five new vice-presidents were elected as follows: **George Asnip,** Excelsior Mills, Inc., Pendleton, S. C.; **H. King Cummings,** Guilford (Me.) Woolen Mills; **Morton H. Darman,** The Top Co.,

PERSONAL NOTES

(from page 189)

Boston, Mass.; **Harold J. Walter,** Bachmann Uxbridge (Mass.) Worsted Co.; **Arthur O. Wellman,** Nichols and Co., Inc., Boston, Mass.

Alexander J. Maino has been appointed executive vice-president of the southern division of Massachusetts Mohair Plush Co., Inc. Mr. Maino, formerly a vice-president in the textile division, will headquarter in Kings Mountain, N. C.

James A. Irvine, an instructor in textile engineering at Lowell Technological Institute, has retired.

J. Haines Spencer has been named vice-president and general manager of the USF-Arnold Finishing division of Indian Head Mills, Inc. Mr. Spencer succeeds **William J. Durocher,** who will remain with the division on a consultant basis.

G. H. Dunlap, director of the placement bureau and chairman of the scholarship committee at North Carolina State College's School of Textiles, was recently presented the "man of the year" award by the college chapter of Phi Psi. In honoring Director Dunlap, the fraternity praised him for "noteworthy contributions to the textile industry and textile education."

Robert C. McAloney has been appointed assistant head of the central purchasing department of Coats & Clark, Inc., New York, N. Y.

Clint Parkins has been named manager of technical services for

Woodside Mills, Greenville, S. C.

I. Lindsay Waggoner has been appointed plant manager of the Winston division of Hanes Hosiery Mills Co. **Thomas L. Hedgecock** has been become superintendent of knitting, and **Harvey N. Young** has assumed duties as superintendent of finishing. * * * **William F. Deuschle** has been appointed manager of the new Weeks division. **Paul Hendricks** has become superintendent of knitting, and **D. E. Anderson** has been named superintendent of finishing.

C. Richard Eichhorn has been named administrative assistant to the vice-president in charge of research and development for Cone Mills Corp., Greensboro, N. C. * * * **John Milligan, Jr.,** has become office manager of the Proximity Print Works plant succeeding Mr. Eichhorn. * * * **Ceasar Cone,** president of Cone Mills Corp., was recently presented the "distinguished citizen award" for 1959 by the Greensboro, N. C., Chamber of Commerce.

Mrs. Sylvia Martin has been elected chairman of the board of directors, and **A. Phillip Goldsmith** has been named president and director of Bates Manufacturing Co., Lewiston, Me.

Oscar J. Paquette has been named superintendent of the Magog (Quebec) Cotton Mill, succeeding Spencer Howcroft, who has resigned. **Hubert Chatelois** has succeeded Mr. Paquette as assistant superintendent at the Merchanus branch.

W. S. Sollenberger, of the American Viscose Corp., has been named vice-president of the central Atlantic region of the American Association of Textile Chemists and Colorists, succeeding **C. T. Anderson,** of the Ciba Co., who has been transferred from the area.

Frederick L. Rader, formerly assistant to the vice-president in charge of manufacturing, has been named president and director of the Berkshire Knitting Mills, Ltd., Montreal, Canada.

Bill Rhyne has been promoted to plant manager of the Sao Paula, Brazil, plant of Firestone Textiles. **Thomas L. Yelton** has accepted the position of assistant manager of the Buenos Aires, Argentina, plant. Mr. Yelton succeeds **Jesse L. Williams,** who has become assistant plant manager of the Sao Paula plant.

Paul K. McKenney, Jr., vice-president and comptroller of Swift Manufacturing Co., Columbus, Ga., has been elected president of the Georgia Textile Manufacturers Association, Inc. Other officers elected were: vice-president—**John P. Baum,** vice-president of the woolen and worsted division of J. P. Stevens and Co., Inc.; treasurer—**G. H. (Jack) Smith,** general manager of the Lindale (Ga.) division of Pepperell Manufacturing

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SHOW WEEK IN GREENVILLE October 3 - 7

For show news, "Keep Your Eye on TI." Complete preview in the October issue.

Co. * * * **R. L. Stevens,** personnel director of Reeves Brothers, Inc., Eagle and Phenix Division, Columbus, Ga., has been elected chairman of the Personnel Managers division of the Association. **Eugene W. Owen,** Canton (Ga.) Cotton Mills, was elected vice-chairman.

George H. McLoof has been named president of Mooresville Mills, a subsidiary of Burlington Industries, Inc. **Charles C. Bassett** has been appointed a vice-president and **William W. Johnson** has become sales manager. * * * **Mark N. Holmes** has been named assistant vice-president of Burlington Hosiery Co. Mr. Holmes will continue as director of quality control and research.

Harry J. Winslow has been named superintendent of dyeing for the JED Processing Corp., Woonsocket, R. I.

Robert F. Cooper, president of Cooper's, Inc., Kenosha, Wisc., has been elected president of the Underwear Institute. Other newly-elected officers of the association include: first vice-president — **Edward L. Gruber,** president of Spring City (Pa.) Knitting Co.; Middle Atlantic regional vice-president — **Jacob B. Kreider,** president of the Walter W. Moyer Co., Ephrata, Pa.; treasurer— **Robert D. Devereux,** president of Oneita Knitting Mills, New York City. **Edwin C. Williamson,** president of Hansley Mills, Paris, Ky., and **Robert F. Gregory,** of Bradford-Norak Co., Bennington, Vt., were elected to the board of directors.

W. Harry McElveen, Jr., has been promoted to plant engineer at the Unity plant of Callaway Mills Co., LaGrange, Ga. * * * At the Hillside plant, **Robert E. Bailey** has been promoted to overseer of compounding, dyeing and finishing. * * * **Edward W. "Ned" Edge** has been named plant engineer at the Elm City plant.

Tom F. King has been promoted to head of industrial engineering for the Dalton and Tallapoosa (Ga.) mills of The American Thread Co.

Wilson A. Reeves, formerly head of chemical modifications investigations, has been appointed chief of the cotton chemical laboratory of the U. S. Department of Agriculture's Southern Utilization Research and Development division, located in New Orleans, La. Mr. Reeves will be responsible for seven areas of research, all dealing with chemical treatments to improve the end uses of cotton textiles.

OBITUARIES

Jarvis E. Baker, 70, a director of Copland-Fowler Industries, Hopedale, N. C.

Benjamin Bearnot, 75, one of the founders of Regal Knitwear Co., New York, N. Y.

Basil D. Browder, 60, executive vice-president of Dan River Mills, Danville, Va.

G. M. Coker, 45, executive of Wehadkee Yarn Mills, Talladega, Ala.

John Duerst, 67, retired director of experimental work and research for Coats & Clark, Inc., Clarkdale, Ga.

Joseph S. Ehrman, 67, former owner and president of Blue Star Knitting Company, Milwaukee, Wisc.

Carl A. Fick, 69, retired executive vice-president of Ames Textile Corp., Lowell, Mass.

Philip S. Grill, 64, superintendent of the ladies' seamless division of Waldensian Hosiery Mills, Inc., Valdese, N. C.

Joseph S. Hubbard, 67, manager of the Reading, Pa., sales office of Scott & Williams, Inc.

Ernest C. Locke, 91, retired from Locke Hosiery Mills, Philadelphia, Pa.

Alden McLellan, 77, secretary-treasurer of Alden Mills, New Orleans, La.

Phillip Aldon Mullins, 66, owner of the Early Bird Hosiery Mill, Hickory, N. C.

Harry L. Munz, 73, retired founder of the Resolution Knitting Mills, Philadelphia, Pa.

David E. Philpot, 76, instructor for 47 years in the A. French Textile School of the Georgia Institute of Technology, Atlanta, Ga.

F. W. Poe, Jr., 69, retired vice-president of Poe Manufacturing Co., Greenville, S. C.

Ernest G. Rice, 50, president and owner of the Jerome Hosiery Mill, High Point, N. C.

E. C. Tomkins, 79, retired vice-president of the P. H. Hanes Knitting Co., Winston-Salem, N. C.

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MILL NOTES

The opening rooms of **Opp Cotton Mills, Inc.,** and **Micolas Cotton Mills, Inc.,** Opp, Ala., have been equipped with an automatic weighing and blending system. The system is designed to deliver the proper proportions of any predetermined amount of cotton or synthetic fibers to the pickers.

Agawam Dye Works, Inc., Lawrence, Mass., has purchased all of the assets of **Putnam (Conn.) Dye Works.** The machinery and equipment has been transferred to the Thies Dyeing Mills, West Warwick, R. I. Francis J. Coleman, former owner of Putnam, will represent the Agawam units in the dyeing trade.

The Binghamton (N. Y.) Knitting Co., Inc., was recently awarded "the 10 year safety plaque" for having completed the tenth consecutive year without a lost time accident.

New elevated temperature yarn dyeing equipment has been installed by the **JED Processing Corp.,** Woonsocket, R. I.

Burlington Industries, Inc., has completed the second phase of a long range communications modernization program. An automatic teletypewriter circuit has been installed connecting the grey goods sales office in New York and the manufacturing plants in the south.

The Westerly, R. I., plant of **American Felt Company** is manufacturing polypropylene felts. The addition of this new line is expected to greatly increase the range of application of "Feutron" filter media for both liquid and dry filtration.

Cabin Crafts, Inc., Dalton, Ga., has awarded a contract for the third addition to the Springdale plant. Scheduled for completion in early fall, the new facility will be used to accommodate existing operations and to allow for expanded carpet tufting equipment.

Indian Head Mills, Inc., has entered the synthetics field with two high quality blends of Dacron/cotton and Arnel/cotton. * * * The recently acquired USF-Aspinook finishing division of Gera Corp., has been renamed USF-Arnold finishing division. * * * The firm has announced the acquisition of certain operating assets of Bernhard Ulmann Co., Inc. and its operating subsidiaries. The firm, which manufactures and imports hand knitting yarns, art needlework products, and decorative linens, will be operated as a division of Indian Head with no change in management or operating personnel.

The knitting yarn plant of **Federal Spinning Corporation,** located in Sanford, N. C., has begun full scale production. The firm is producing yarns of Orlon and other long fiber synthetics plus blends with wool, and worsted, and all worsted. Yearly output is expected to be two to two and one half millions pounds.

An expansion program totaling $95,000 has been announced for the Spartan Plant and Beaumont Mills division of **Spartan Mills,** Spartanburg, S. C. A new company-operated general merchandising store will be constructed.

A new central station air change system has been installed in the spinning room of **Marion (N. C.) Manufacturing Co.** Plans have been announced for the installation of nine additional spinning frames at a cost of approximately $125,000. The lighting system in the card room has been renovated, new card coilers, large card cans, and 92 individual card drives have been installed.

American Carpet Mills, a subsidiary of Air Controls Products, Inc., recently held ground breaking ceremonies at the cite of the new $2 million fully integrated plant at

Cartersville, Ga. When completed, the plant will contain 150,000 sq ft with 2800 additional feet of office space and will combine all operations of the company under one roof. Completion date has been scheduled for September.

Jefferson Mills, Pulaski, Va., was recently presented a safety plaque for having amassed over one million man-hours without a lost-time accident.

A $500 scholarship will be awarded to a Clover High School senior from the employees of the Clover, S. C. mill of **The American Thread Co., Inc.** Funds from the proceeds of the soda purchases, which go into the employee welfare fund, are being used to make the scholarship available to any senior with a parent employed by the company.

A 24,000 sq ft addition will be constructed at the **Clearwater (S. C.) Finishing Co.** plant to allow expansion of the folding and opening stock department and afford consolidation of the general offices. Completion is expected by early fall.

A new firm, **Eddystone Hosiery Mills, Inc.,** High Point, N. C., has started production of seamless hosiery. Thirty machines are in operation. E. W. Freeze is secretary-treasurer and general manager.

Fred Whitaker Co., Philadelphia, Pa., has contracted for a $1,000,000 wool cleaning and processing plant to be constructed near Beldoc, S. C. Completion is expected in about six months.

Installation of new knitting machines, trim units, and a complete sweater washing plant has been completed at the **Thurman Manufacturing Co.,** Philadelphia, Pa.

An expansion program, estimated at $5,000,000 and which will provide employment for an additional 350 persons, has been announced by **The Springs Cotton Mills,** Fort Mill, S. C.

Hickory Knitting Mills, Inc., is the name which has been given to the full-fashioned sweater manufacturing firm which recently began operations in Hickory, N. C. (reported in March, 1960, issue of TD).

Finetone Knitting Mills, Inc., formerly of 772 Pacific St., has moved into new and larger quarters at 248 Flushing Ave., Brooklyn, N. Y.

SUPPLIER NOTES

Eugene R. Perry (left), president of **National Vulcanized Fibre Company,** is pictured as he received the first annual management award of the Wilmington, Delaware chapter, Society for the Advancement of Management. J. H. Tyler McConnell, secretary and a director of the **Hercules Powder Company,** made the presentation. Mr. Perry was named "Man of the Year" for 1960 and was honored for "exemplary application of the principle of management and leadership in civic and charitable affairs of the community."

K. Russell Knoblauch has been appointed market sales manager for the Philadelphia-based Industrial Products Group of **Minneapolis-Honeywell Regulator Co.**

William Bouton has joined the New York sales office of **Standard-Coosa-Thatcher Company** as a salesman in New York City and New England areas.

George E. Missbach & Company, Atlanta, Ga., has been appointed southeastern sales representatives for **Instrument Development Laboratories,** a subsidiary of Royal McBee Corp.

Philip H. McLaughlin has been named general sales manager of **Century Chemical Corp.** In his newly created position, Mr. McLaughlin will be responsible for all phases of the company's sales and marketing activities including planning, organization, and coordination.

P. L. Carter, president, and J. A. Carter, vice-president of **Carter Bros., Inc.,** have retired. The firm will continue to operate under the management of Rowell Carter, J. H. Bradley, and R. W. Boyd.

Daniel Construction Company has opened a new North Carolina division office at 440 West Market Street, Greensboro, N. C. Eldon F. Matteson has been appointed manager.

Charles Goulekas, formerly of the Charlotte office; James Foley, recently with Celanese Corp., and D. "Dusty" Roads of the San Francisco office, have been assigned to the New York fiber sales office of **The**

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— To Save You Money.

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LAWRENCE, MASS., U.S.A.
SERVING NEW ENGLAND SINCE 1917

SUPPLIER NOTES

(from page 193)

Mr. Stone
National Starch

Mr. Carpenter
Emkay

Mr. Holmes
Durant

Mr. Gray
Taylor Instrument

Dow Chemical Co. * * * Sven Nordin has been transferred from New York to the Connecticut and Rhode Island sales area, through the Boston office.

Robert L. Carpenter has been named sales representative for **Emkay Chemical Co.** Mr. Carpenter will assist Tom Hall in the North and South Carolinas.

William H. Stone has been appointed southeastern division manager of **National Starch and Chemical Corp.** Mr. Stone's headquarters are in Atlanta, Ga.

Allen B. Holmes has assumed duties as mid-west and southern regional manager of **Durant Manufacturing Co.** Mr. Holmes succeeds J. K. McGinley, who has been named general sales manager.

Warren C. Gray has been named to the newly-created position of southeast regional sales manager of **The Taylor Instrument Companies.** Mr. Gray is headquartered in Atlanta, Ga.

Frederick L. Bissinger has been elected president and chief executive officer of **Industrial Rayon Corp.** Hayden B. Kline has been named chairman of the board of directors.

Michael Lombardi has been promoted to manager of the rebuilt machinery division, and James J. Fine has been named manager of the mill supply division of **Standard Mill Supply Co.**

Larry O. Bellerose, formerly with Whitin Machine Works, has been appointed sales engineer for the New England territory for **Carter Traveler Co.,** division of A. B. Carter, Inc.

Daniel O. Robbins has been appointed assistant New York district sales manager of the **Celanese Corp. of America.** * * * Harry B. Bartley, Jr., has been named field sales manager of Celanese Chemical Co.

Forest J. Campbell has been named sales representative for **Piedmont Machine Shop, Inc.** Mr. Campbell will cover South Carolina, Georgia, Tennessee, and a portion of North Carolina.

Crown Zellerbach Corp. will consolidate the Kansas City and St. Louis flexible packaging operations in a new plant to be constructed at Hazelwood, Mo. As a production outlet of the Western-Waxide division, the new 245,000 sq ft facility will be the company's largest flexible packaging plant.

George W. Waiting has been promoted to assistant manager of New York district sales in the fibers division of **American Viscose Corp.** Mr. Waiting succeeds Edwin L. Marston, who was recently named New York district sales manager.

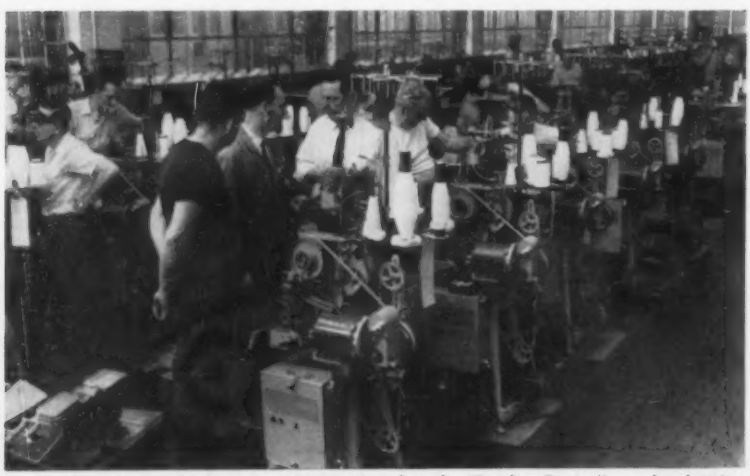
The Fafnir Bearing Co. has announced the appointment of Stanley G. Fisher as general sales manager.

Barber-Colman Company has announced plans for an addition to the Park plant. When completed, the new facility will increase the present Automatic Controls Division plant area by approximately 170,000 sq ft.

Karl B. Nixon has been appointed to the sales staff of **Whitin Machine Works.** Mr. Nixon, who was formerly agent at the Newnan (Ga.) Mills Division of Mt. Vernon Mills, Inc., will work out of the Atlanta, Ga., regional office. * * * A contract has been awarded the company to install 279 frames (89,208 spindles) of spinning changeover equipment in the Kingsport, Tenn., plant of J. P. Stevens and Co., Inc. New bottom rolls and compound draft gearing are also included in the order.

Rodney M. Barnes has been appointed converter representative for the fibers division of **American Cyanamid Co.** In his new post, Mr. Barnes will work with converters in developing programs for merchandising fabrics made from Creslan.

Thomas J. Ault, president and director of **Saco-Lowell Shops,** has resigned. * * * William F. Lowell, Jr., has been promoted to vice-president and assistant general manager of the International division. * * * T. J. Jackson has been appointed sales engineer of the textile machinery



Increased production facilities have been assigned to the "Reading-Booton" seamless knitting machine at **Textile Machine Works,** in order to meet the demand for machines producing women's seamless hosiery. The company recently completed a five-year product diversification program. In celebration a week-long invitational open house was held spotlighting the new and varied types of work. Contract design, engineering, foundry, and machining operations plus consumer products now make-up a major part of company operations.

Mr. Lombardi
Standard Mill

Mr. Fine
Standard Mill

Mr. Enloe
Howard Bros.

Mr. Hett
Dixon Corp.

Mr. Nixon
Whitin

Mr. Jackson
Saco-Lowell

division. Mr. Jackson will work out of the Atlanta, Ga., office. * * * David F. Edwards, chief executive until his retirement from active management in 1952, has accepted the position of chairman of the board of directors.

Othello Scarponi has been appointed end-use development technologist for Caprolan nylon in the fiber marketing department of **Allied Chemical Corp.**

E. Schober has been named technical manager of **Putnam Chemical Corp.**

Howard Bros. Mfg. Co. has announced the appointment of Gordon W. Enloe as sales representative, traveling out of the Atlanta, Ga., plant.

Charles Edward Hett, Jr., has been named sales engineer for Georgia, Alabama, and Tennessee for **Dixon Corp.**

John C. Morrison has been elected president of **Morrison Machine Co.,** succeeding his late father. Mr. Morrison also heads the recently formed **Morrison Textile Machinery Co.**

The executive and administrative offices of **Jacques Wolf & Co.,** a Nopco Chemical Co. subsidiary, have been moved from Clifton, N. J., to Nopco's main offices at 60 Park Place, Newark, N. J.

The new $2,100,000 plant addition of Harvestore Products division of **A. O. Smith Corp.** has been completed.

Seydel-Woolley & Co., has announced the appointment of Charles W. Braswell as technical sales representative of the finishing chemical division for the Alabama, Georgia, and Tennessee territory.

The western district headquarters of the dyes and chemicals division of the organic chemicals department of **E. I. du Pont de Nemours & Co., Inc.,** has been moved to Palo Alto, Calif. Arthur G. Pope, formerly sales supervisor, has been named manager.

G. L. Bryson, Jr., has been named to represent the **Graton & Knight Co.,** a division of the L. H. Shingle Co., in the Carolinas, Tennessee, and Virginia.

James F. Whalen, Jr., has been promoted to southern district manager for **Becco Chemical Division** of Food Machinery and Chemical Corp. Mr. Whalen will be headquartered in Charlotte, N. C. Vernon E. Moore has been named Mid-West district manager with headquarters in Chicago, and Arthur J. Raynor, Jr., has become west coast district manager, and will have headquarters in Vancouver, Wash.

Paul H. Farmer has been appointed sales manager of **Foster Machine Company,** succeeding Edward C. Connor who was recently elected president of the company.

The marketing and sales departments of **Miles Chemical Co.,** a division of Miles Laboratories, have consolidated. * * * W. J. Ferracone has been named general sales manager of the company. L. D. Williams, formerly sales manager of Sumner products, has been appointed to the newly created position of special projects sales manager. W. E. Irwin has been named market research supervisor and J. M. Fergusson has become eastern regional sales manager. The unification of all components of sales and marketing into a single, larger entity will provide over-all strengthening in marketing, product development, research, sales, and customer service, the announcement stated.

E. M. Penney, formerly manager of textile products sales, has been named manager of industrial textile marketing for **Pittsburgh Plate Glass Co.**

At the annual meeting of **The Vat Dye Institute, Inc.,** held in New York City recently, James L. Naylor, manager of the dyes department of the organic chemicals division of American Cyanamid Corp., was elected president. Other officers elected were: senior vice-president—H. C. Spatz, president, Geigy Dyestuff, division of Geigy Chemical Corp.; vice-president—T. C. Keeling, vice-president of Koppers Co., Inc.

Rhodia, Inc., has announced the appointment of Ralph Gossett & Co., Greenville, S. C., as sales representatives for Rhovyl fibers in South Carolina, Georgia, Alabama, and Tennessee. Charles E. Boger of Concord, N. C., will cover the North Carolina and Virginia territory.

The Singer Manufacturing Co. has announced the acquisition of the assets of **Fidelity Machine Co., Inc.** The latter firm will operate as a subsidiary of the parent firm under the direction of the special products division. Lawrence Katz will continue active direction of Fidelity.

Mr. Bryson
Graton & Knight

Mr. Braswell
Seydel-Woolley

Mr. Farmer
Foster

Mr. Whalen
Becco

SUPPLIER NOTES

(from page 195)

James H. Crow, Jr., has been elected a vice-president of **The Chemstrand Corp.** • • • William R. O'Shields, senior technical service specialist at the Pensacola plant, has been named resident technical services representative for the plant now under construction at Greenwood, S. C. • • • John H. Barrows has been promoted to the position of manager of industrial merchandising. In his new assignment, Mr. Barrows will supervise the merchandising of nyon and Acrilan acryic fiber for industrial end uses.

The Carus Chemical Co., Inc., has announced the opening of a new end-use research laboratory to develop and evaluate processes using the company's products in the textile industry. Potassium permanganate is being evaluated as a bleaching agent for both natural and synthetic fibers. Technical personnel of the laboratory are available for consultation and field assignments.

A newly created firm, **Olympic Chemical Co.,** has moved into the building formerly occupied by the Revolution Rayon Plant in Greensboro, N. C. The firm will produce polyurethane foam for the furniture and rug industries and for other uses. Officers are: president—Robert W. Ward; vice-president—Sydney M. Cone, Jr.; secretary-treasurer — Harold W. Smith; assistant secretary —Alan W. Cone.

The American Pulley Co., including its Hubbard Spool division, has merged with **Van Norman Industries, Inc.**

Ten years

(from page 129)

these statistics.

While the new man-made fiber fabrics category, excluding rayon and acetate, continued its almost uninterrupted march and set a record high of 846,760,000 linear yards, rayon and acetate broad woven goods at 1,595,773,000 yards were 58,257,000 short of 1958 figures. The 100 per cent filament yarn fabrics at 668,816,000 yards set a record low, and 100 per cent spun fabrics showed a sharp decrease, although above their 1957 low. Combination fabrics were off slightly. On the other hand both the pile, upholstery, drapery, tapestry, and tie fabrics group, and the "all other" classification registered new highs.

Woolen and worsted fabrics at 305,855,000 linear yards were the best since 1956, advancing from the low point of 270,182,000 shown for 1958. Silk and miscellaneous fabrics likewise gained from 1958 and were the best since 1956.

The data are summaries from the several quarterly and annual series of the Bureau of the Census on broad woven goods.

Weld and save

(from page 141)

parts being one third or more longer than new parts by actual test.

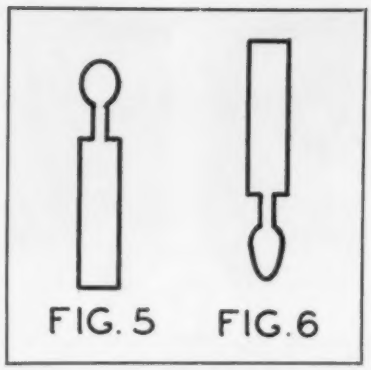
From experience I have found the best way to do the welding on these two parts is to place the parts, worn side up, in a vise as shown in Fig. 5, weld a ball about the size shown in the sketch, let it set for a minute, then hold the part with a pair of pliers ball down as shown in Fig. 6 and heat until ball gets slightly oblong and allow to cool. The parts are so thin where they wear that it is very difficult to restore the metal any other way.

Heating with the ball downward is not a necessary operation in so far as actual welding is concerned; it simply makes a smaller ball requiring less grinding.

The rule to follow is build up only what is needed to have sufficient material to get a finished job after grinding. Excessive material means wasted rod and useless grinding. Save both by careful welding.

The only requirements are a regular acetylene welding outfit, rod and flux, patience and practice. A dollar's worth of rod will rebuild two or three dozen such pieces, depending on how badly they are worn and how the welding is done. We searched a long time before we found a rod that was satisfactory.

On some types of machines it is necessary to do considerable grinding and polishing to get new parts to fit and function properly. In such cases machine fixers find it much easier, and faster, to have a worn part built up and refitted than to fit a new part. Frequently this has been done in a total elapsed time of 20 minutes, which included removal from machine, welding, grinding to original shape, polishing, and replacing.



How the weld metal is applied to the parts discussed in this article is demonstrated in this schematic drawing. Since the worn portion is rather thin, restoration can be difficult and is best done by turning the worn portion up and laying a heavy bead onto it. This bead is thinned by inverting the part and applying the torch to the bead until it becomes plastic and flows to the approximate thickness needed for the grinding.

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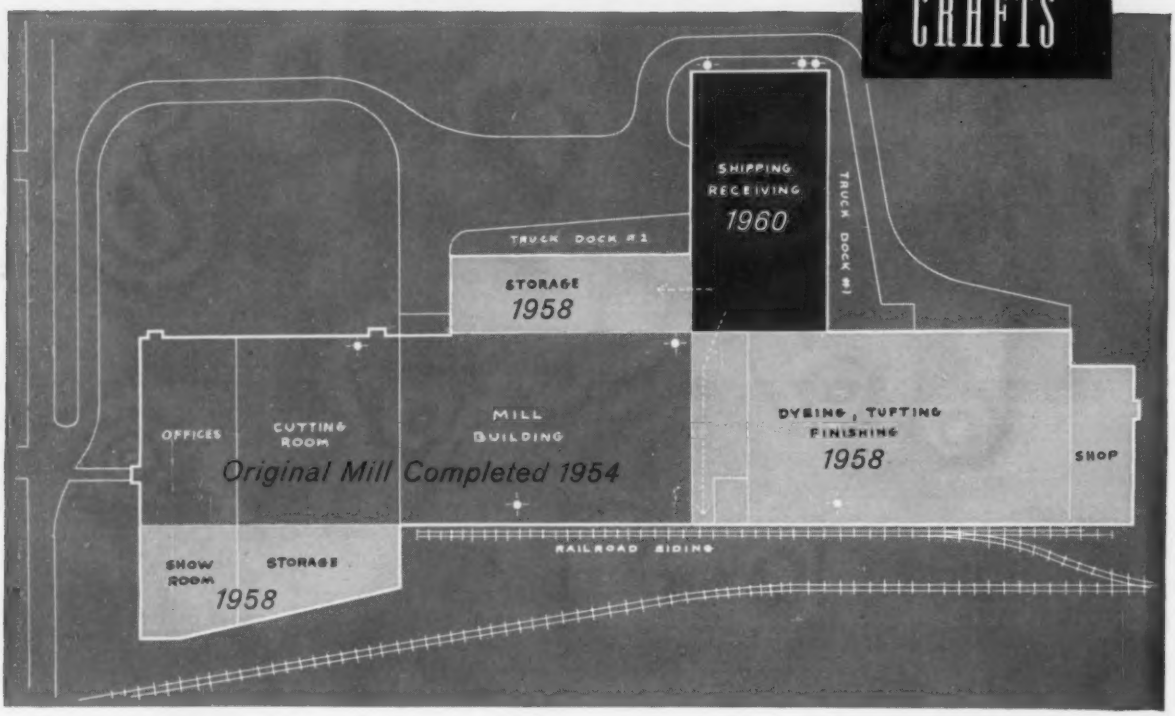

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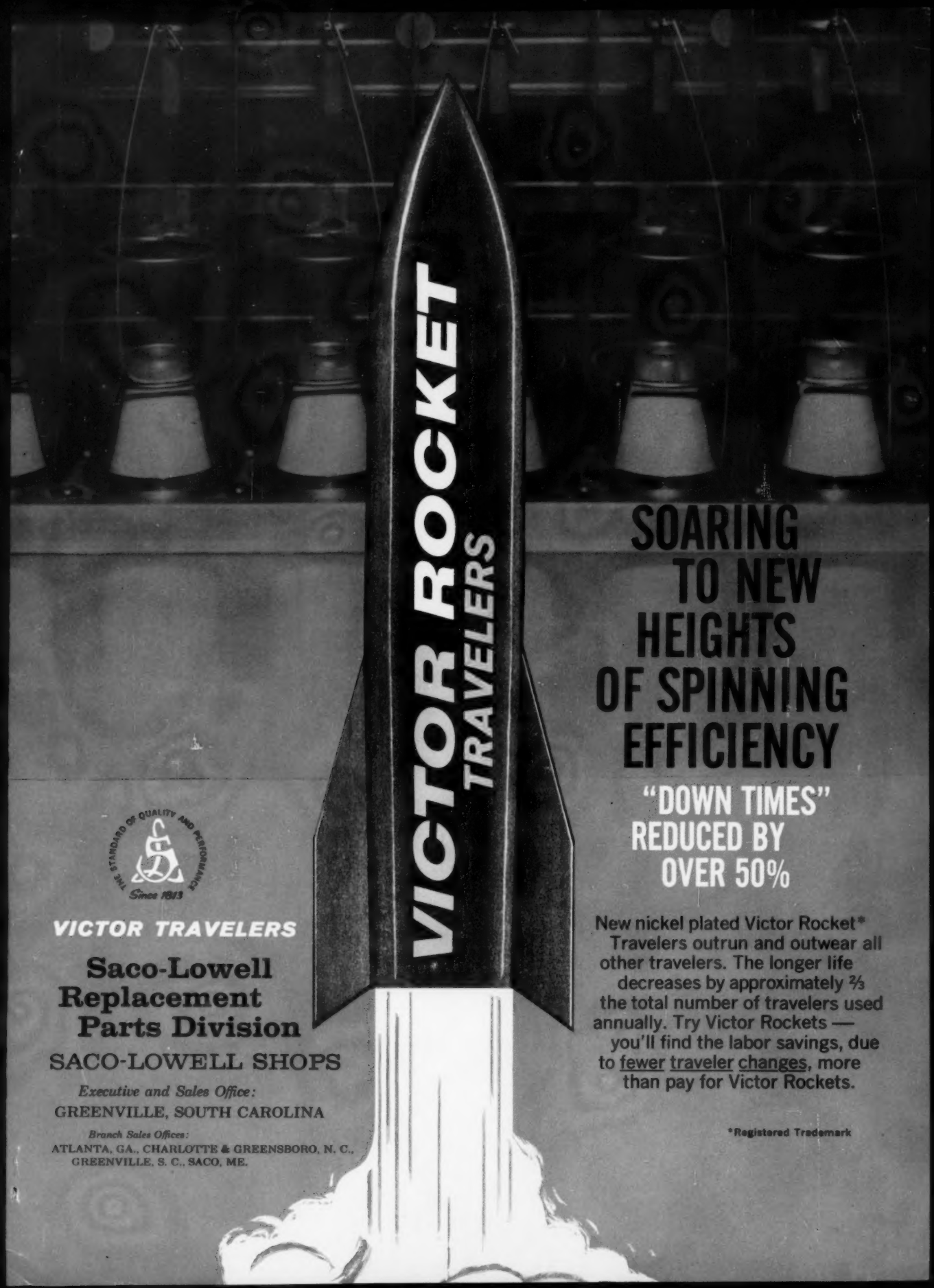

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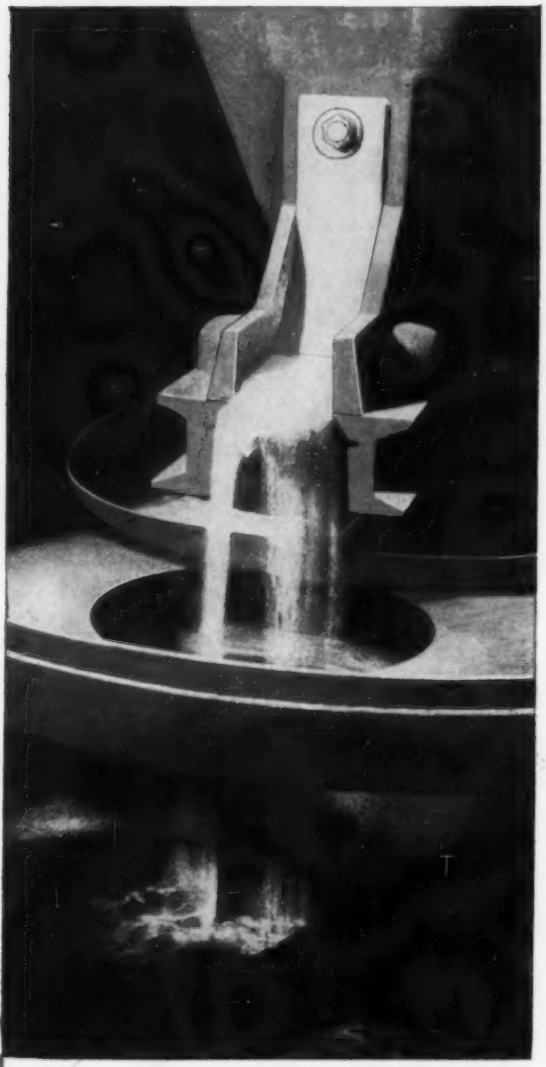

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